THE

AMERICAN GAS-LIGHT JOURNAL.

THE OFFICIAL GAZETTE OF

LIGHT, HEAT, WATER-SUPPLY, AND SEWERAGE.

Rooms—No. 39 Nassau Street, cor. Liberty Street, opposite the Post-Office, New York.

VOL. V.—No. 99. NEW YORK, MONDAY, FEBRUARY 1, 1864. $3 PER ANNUM.

ON THE LIBERATION AND DRAINAGE OF GASES FROM COAL MINES.

At the last meeting of the Manchester Geological Society, Mr. Joseph Goodwin, of the Hyde and Haughton Collieries, read a paper on this subject, in which he stated that the gases met with in coal mines are carbonic acid and light carburetted hydrogen, better known by the names of black (or choke) damp, and fire-damp. Occasionally carbonic oxide, sulphuretted hydrogen, and other gases are met with. The precise circumstances under which carburetted hydrogen has been formed are a matter of conjecture, but it is probably derived from the decomposition of vegetable matter in the coal seams. The causes producing the other gases are numerous: the decomposition of coal *in situ*, of iron pyrites, and of other minerals, and the rapid decay of timber and other substances. There are also the gases formed by the breathing of men and animals, the combustion of lights, and the blasting of coal by powder. Carburetted hydrogen sometimes proceeds more freely from the roof of the mine than the floor, and *vice versa*, but in either case it is also given off from the coal seam. Carbonic acid gas does not appear to be given off from the coal, neither have the remaining gases been yet proved to emanate from the coal.

The circumstances under which gases are liberated or drained from coal seams vary considerably. It would be in vain to lay down a rule as to the distance a coal seam can be drained of gases by working out an upper or under seam. It seems possible that gases may be liberated, or drained, from coal *in situ* by working an under seam, the falls of roof in which reach up to an upper seam; or by working out an upper seam, separated by only a few feet of strata from an under one, in which carburetted hydrogen exists under great pressure, or that in opening out a maiden field, the exploring drifts may drain the drifts that follow them. But it does not seem possible for a mine to be drained of carburetted hydrogen by working another seam at a distance of thirty yards or so. Mr. Goodwin cites some cases where coal seams have been worked at distances varying from 4 feet to 14 yards and upwards, without producing any such effect. One of these occurred at Clayton Colliery on the 14th of April last. Some time previously a brow was driven in the Four-feet mine, on the one side of which was the engine-brow, at a distance of 26 feet, and on the other side the return air-course, at a distance of 10 feet; besides which, levels had been driven at right angles to the brows, at a distance of 12 yards from each other. In driving the brow, a considerable quantity of carburetted hydrogen was found to be given off from the coal almost the whole length of the brow; and on the morning previously named more than 30 cubic yards of space was filled with explosive gas in less than an hour. The engine-brow, return air-course, and levels, have been driven more than ten years, and therefore the gas has had time enough to have drained from the coal, if it would have drained at all.

In another case in the Peacock Mine, at the Hyde Colliery, two levels had been driven for many years, and were being worked back towards the shaft, when the roof of one of the works fell, and rendered it necessary to cut up within a foot or 15 inches of the old working face, in order to regain it. In so doing a considerable quantity of gas was given off from the coal, although on the one side was a thrill, or cross-cut, at the distance of three yards; and on the other side not more than fifteen inches of coal to where a current of air was passing, the distance between the levels in this case was from eleven to twelve yards. Another instance occurred at the same colliery in driving a pair of brows in the Black Mine. After being driven two or three yards each, a drill-hole was made in the top part of the coal for the purpose of inserting a plug. This drill-hole was not more than eight inches in depth, yet it liberated such a quantity of gas that it was with difficulty extinguished after it became ignited.

At Fairbottom Colliery, according to Mr. Horsfall, in the Black Mine, at the Broad Oak Pit, there is a rank 120 yards long and ten yards in breadth. At certain distances are cut-throughs, when driving which the greatest difficulty is experienced from the time two or three feet are cut down, in consequence of the gas given off the coal. The pillars above the rank referred to have been worked out a considerable number of years, so that the gas has had sufficient opportunity of being drained, if such had been possible. At the same pit, in driving through a pillar of coal only five feet in width, a considerable quantity of gas was given off from the coal. At the Heys Colliery, two mines have been worked fourteen yards apart; in the bottom seam they have been working back the coal for some time, and in the upper one narrow work is being driven previous to removing the pillars; yet the upper mine gives off great quantities of carburetted hydrogen. These are not the only cases that could be cited to show that the distance that gases will drain from coal seams is very limited.

Referring to the law of the diffusion of gases, Mr. Goodwin stated that in the mine we invariably find the carbonic gas to occupy the lowest position, and the carburetted hydrogen the higher. He instanced a case of the former gas occupying the lower side of a wagon road for upwards of fifty yards, so that a light was extinguished by putting it into the gas as suddenly as by immersing it in water, while on the higher side a light would burn readily. On the other hand he instanced a case where he had crawled for nearly one hundred yards along a level where the gases would explode on the higher side, while the presence of carburetted hydrogen could not be discovered by the safety lamp on the lower side. It is a fact beyond doubt that carburetted hydrogen occupies the highest stratum in the atmosphere of a mine, and carbonic acid the lowest. It has been suggested that this departure from the general law of the diffusion of gases may be caused by the gases being given off more quickly than the law of diffusion acts; but Mr. Goodwin does not consider this suggestion a sufficient explanation, for he has seen places where the same conditions have been held good after being undisturbed for months.

As it is well known that the admixture of a certain proportion of atmospheric air with carburetted hydrogen is necessary to make the latter explosive; and as this explosive compound would, from such admixture of atmospheric air, be heavier than the pure carburetted hydrogen, it would appear from these facts that we should expect the highest stratum in the atmosphere of a mine to be less explosive than the stratum beneath. This, however, is not the case; for fire-damp is met with in many places where at the floor its presence cannot be detected in the lamp, but by raising the lamp a little the flame becomes elongated, and as the lamp is raised the flame gradually increases, until at the roof of the mine it will explode and fill the lamp.—*London Mining and Smelting Magazine.*

COAL PRODUCT OF GREAT BRITAIN FOR 1862.

According to Hunt's Statistical Returns the total number of collieries in the United Kingdom is 3,088, being an increase of 36, as compared with the preceding year. The quantity of coal raised in 1862 was less than that raised in 1861, owing, no doubt, to the interruptions to which some branches of our manufactures have been subjected. In 1861 Mr. Hunt estimated the quantity used and sold at 83,635,214 tons; while in 1862 he gives it at 81,638,338 tons. A decrease of nearly 2,000,000 tons. The number of collieries, and the quantity of coal raised during the seven years ending December, 1860, are as follows:

Year.	No. of Collieries.	Tons of Coal raised.
1854	2,397	64,661,401
1855	2,613	64,458,079
1856	2,829	66,645,450
1857	2,867	65,394,707
1858	2,958	65,008,649
1859	2,949	71,979,765
1860	3,009	84,042,698
1861	3,052	83,635,214
1862	3,088	81,638,338

The number of collieries, and the quantity of coal raised in each of the several districts, are as follows:

District.	No. of Collieries.	Tons of Coal raised.
Durham and Northumberland	279	19,360,356
Cumberland	28	1,330,287
Yorkshire	418	9,255,500
Derbyshire	155	4,534,800
Nottinghamshire	21	732,666
Leicestershire	10	696,024
Warwickshire	16	678,000
Staffordshire and Worcestershire	571	7,522,750
Lancashire	379	10,597,500
Cheshire	89	787,750
Shropshire	65	1,029,750
Gloucestershire, Somersetshire, and Devonshire	120	1,750,000
Monmouthshire	86	3,750,000
South Wales	330	6,749,455
North Wales	77	1,660,000
Scotland	448	11,076,000
Ireland	46	127,500
Total produce of United Kingdom	3,088	81,638,338

NUMBER OF BRITISH COAL MINERS.

During 1862, it appears from the lists given in Hunt's appendix, corrected by the inspectors of collieries, that 3,088 collieries have been worked, producing altogether 81,638,338 tons of coal. This enormous amount of mineral wealth has been produced by the labors of 240,000 coal miners, distributed in the various coal districts of the United Kingdom, as follows:

Durham	36,996	Lancashire	41,741
Northumberland	12,669	Cheshire	2,819
Cumberland	4,371	Shropshire	4,586
Yorkshire	32,022	Gloucestershire	2,771
Derbyshire	10,842	Somersetshire	5,408
Nottinghamshire	6,791	Devonshire	753
Leicestershire	2,468	North Wales	6,553
Warwickshire	1,959	South Wales	31,158
Staffordshire	33,463	Cornwall	4
Worcestershire	2,853		
Total			240,227

BRANDY, GIN, AND WHISKY FROM COAL GAS.—Coal appears to be the modern Proteus. A Scottish paper, after stating that brandy has been produced from coal gas in France, under a patent both for France and Britain, says, "the work of manufacture is on the point of being started in London. The richer any coal is in olefiant gas the better is it fitted for the manufacture of spirits—brandy or whisky. The old joke of representing a man who was half-seas over as being 'gassed,' will not be found far from the truth after all."—*London Builder*

GAS-LIGHT COMPANIES IN THE UNITED STATES.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. Per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS
1857	ADRIAN	Mich.	50,000	50	—	May & November.	4,000	3 50	....	....	
1856	AKRON	O.	20,000	33⅓	—	Do.	3,500	3 00	....	....	
1845	ALBANY	N. Y.	25',000	20	4	January & July.	65,000	3 00	120	....	None in market.
1858	ALBION	N. Y.	30,000	100	—	Do.	3,000	3 80	....	....	
1851	ALEXANDRIA	Va.	106,580	—	—	City Works.	9,000	3 50	....	....	
1852	ALLEGHANY	Pa.	200,000	25	4	May & November.	25,000	3 00	....	....	
1858	ALLENTOWN	Pa.	60,000	100	3½	Do.	5,000	3 50	....	....	
1857	ALTON	Ill.	75,000	—	—	Private Works.	4,000	3 50	....	....	
1859	ALTOONA	Pa.	40,000	20	4	January & July.	5,000	3 00	....	....	
1859	AMESBURY AND SALISBURY	Mass.	30,000	25	—	Do.	7,000	4 00	....	....	
1856	ANNAPOLIS	Md.	100,000	25	—	Do.	4,000	4 00	....	....	
1858	ANN ARBOR	Mich.	23,000	50	5	March & September.	5,500	4 00	....	....	
1858	ASTORIA	N. Y.	20,000	50	—	Do.	6,000	4 00	....	....	
1855	ATLANTA	Ga.	50,000	25	5	January & July.	12,000	5 00	....	....	
1857	ATTLEBORO'	Mass.	6,000	50	3	Do.	2,000	6 00	....	....	
1850	AUBURN	N. Y.	80,000	50	5	Do	10,000	7 00	....	....	
1851	AUGUSTA	Ga.	80,000	25	8	Do.	9,000	6 00	....	....	
1858	AUGUSTA AND HALLOWELL	Me.	84,700	50	5	Do.	10,000	4 00	....	....	
1860	AURORA	Ind.	10,000	—	—	Private Works.	3,500	3 50	....	....	Formerly used Sanders' Water-Gas. Recently altered to Coal Gas-Works.
1817	BALTIMORE	Md.	550,000	100	5	June & December.	150,000	2 50	150	....	None for sale.
1852	BANGOR	Me.	120,000	100	2½	January & July.	12,000	3 00	100	....	
1855	BATAVIA	N. Y.	32,000	20	4	Do.	2,500	4 00	100	100	Stock firm. Good works and well managed.
1853	BATH	Me.	65,000	100	3	April & October.	10,000	3 75	....	....	
1859	BATH	N. Y.	115,000	50	—	May & November.	8,000	7 00	....	....	
1861	BATTLE CREEK	Mich.	15,000	—	—	January & July.			....	....	
1853	BELFAST	Me.	14,000	100	—	Do.	7,000	7 00	....	....	
1856	BELLEFONT	Pa.	30,000	25	2	Do.	8,500	4 00	....	....	
	BELOIT	Wis.	30,000	—	—	Do.	4,000	4 00	....	....	
1854	BETHLEHEM	Pa.	50,000	50	4	June & December.	2,000	3 20	....	....	
1859	BEVERLY	Mass.	40,000	100	—	January & July.	4,000	4 00	....	....	
1853	BINGHAMPTON	N. Y.	50,000	50	3½	Do.	10,000	4 00	....	....	
1859	BIRMINGHAM	Pa.	40,000	50	—	Do.	4,000	4 00	....	....	
1855	BLOOMINGTON	Ill.	40,000	50	—	Do.	6,000	4 00	....	....	
1853	BORDENTOWN	N. J.	50,000	25	3	June & December.	4,000	3 80	....	....	
1822	BOSTON	Mass.	1,000,000	500	5	Do.	130,000	2 25	....	....	
1859	BRATTLEBORO'	Vt.	21,000	—	—	Do.	3,000	4 00	....	....	
1851	BRIDGEPORT	Ct.	90,000	25	4	January & July.	10,000	4 00	90	....	Passed last dividend.
1857	BRIDGETON	N. J.	50,000	20	—	Do.	5,000	4 00	....	....	
1856	BRISTOL	Pa.	30,000	25	3	February & August.	3,000	4 00	....	....	
1855	BRISTOL	R. I.	35,000	50	2	January & July.	6,000	4 00	....	....	
1859	BROCKPORT	N. Y.	25,000	100	3	Do.	1,500	4 00	....	....	
1858	BROOKLINE	Mass.	66,000	100	3½	February & August.	3,500	3 50	....	....	
1825	BROOKLYN	N. Y.	2,000,000	25	5	January & July.	75,000	2 50	170	160	
	BROWNSVILLE	Pa.				Do.			....	....	
1848	BUFFALO	N. Y.	600,000	50	5	Do.	70,000	2 90	140	125	
1852	BURLINGTON	N. J.	100,000	25	3½	Do.	5,000	4 00	105	....	
1853	BURLINGTON	Vt.	75,000	25	2½	Do.	10,000	4 50	....	....	
1859	BURLINGTON	Iowa.	65,000	50	—	Do.	8,000	4 00	....	....	
1861	CALAIS	Me.	90,000	100	—	Do.	10,000	3 50	....	....	
1852	CAMBRIDGE	Mass.	800,000	100	5	February & August.	20,000	3 50	100	97½	
1852	CAMDEN	N. J.	800,000	100	3	April & October.	15,000	3 85	105	100	
1858	CANANDAIGUA	N. Y.	50,000	50	—	January & July.	3,000	4 00	90	80	
1856	CANTON	O.	19,000	50	6	March & September.	6,000	3 00	....	....	
1853	CAPE ISLAND	N. J.	80,000	100	—	October.	10,000	6 00	....	....	Watering place,—These Works only run in summer.
1860	CARBONDALE	Pa.	16,000	25	—	March & September.	5,000	4 00	....	....	
1855	CARLISLE	Pa.	30,000	25	—	January & July.	4,000	4 00	.. .	...	
1856	CATASAUQUA	Pa.	15,000	25	5	May & November.	2,000	4 00	....	....	
1858	CATSKILL	N. Y.		—	—	Private Works.	3,000	3 00	....	....	Owned by G. T. Sutton.
1857	CHAMBERSBURG	Pa.	30,000	25	—	January & July.	3,000	4 00	....	....	
1846	CHARLESTON	S. C.	723,800	25	4	Do.	50,000	4 00	....	....	
1851	CHARLESTOWN	Mass.	200,000	50	4	Do.	30,000	3 00	105	.. ..	
1858	CHARLOTTE	N. C.	14,000	50	10	March & September.	3,500	6 00	....	....	
1859	CHARLOTTEVILLE	Vt.	15,000	25	—	Do.	4,000	4 50	....	...	
1851	CHELSEA	Mass.	100,000	100	3½	January & July.	8,000	3 50	....	....	
1856	CHESTER	Pa.	35,000	25	3	April & October.	4,000	4 00	....	....	
1849	CHICAGO	Ill.	1,300,000	25	5	January & July.	100,000	2 50	150	140	Very scarce. Stock wanted.
1857	CHICOPEE	Mass.	50,000	20	—	Do.		4 00	....	....	
1851	CHILLICOTHE	O.	40,000	25	4	Do.	12,000	3 50	....	....	
1841	CINCINNATI	O.	1,600,000	100	5	Do.	225,000	2 50	....	....	
1859	CITIZENS', BROOKLYN	N. Y.	1,000,000	20	—	Do.	135,000	3 00	128	125	
1860	CITIZENS', READING	Mass.	90,000	100	—				....	....	
	CLARKESVILLE	Tenn.	100,000	50	—	Do.	5,000	4 00	....	....	
1860	CLAREMONT	N. H.	20,000	100	—	March & September.	3,000	4 00	....	....	
1846	CLEVELAND	O.	200,000	10	5	January & July.	20,000	3 00	....	....	
1858	CLINTON	Mass.	30,000	500	5	Do.	3,000	4 00	....	...	
1859	CLYDE	N. Y.	10,000	50	4	Do.	2,500	4 00	...	....	
1854	COHOES	N. Y.	50,000	20	3½	April & October.	5,000	3 60	....	....	
1860	COLD SPRING	N. Y.	30,000	50	—	Do.	3,500	4 00	95	....	Formerly Rosin-Gas, but now Coal. A well managed company. Stock firmly held.
1860	COLD WATER	Mich.	25,000	50	5	January & July.	4,000	4 60	....	....	
1852	COLUMBIA	Pa.	37,500	25	—	Do.	4,000	3 50	....	....	
1852	COLUMBIA	S. C.	44,000	25	4	Do.	6,000	6 00	...	....	
1857	COLUMBIA	Cal.	50,000	25	—	Do.	4,500	10 00	....	....	
1858	COLUMBUS	Ga.	54,000	25	5	Do.	5,000	7 00	....	....	
1850	COLUMBUS	O.	100,000	10	6	Do.	30,000	3 00	....	....	
1858	CONCORD	N. H.	50,000	50	5	Do.	8,000	3 50	....	....	
1858	COVINGTON AND NEWPORT	Ky.	100,000	50	3½	Do.	28,000	4 00	...	....	
1854	CUMBERLAND	Md.	60,000	50	3	Do.	6,000	4 00	....	....	
1857	DANBURY	Ct.	50,000	25	4	Do.	2,000	3 75	....	...	
1856	DANVILLE	Pa.	30,000	25	—	June & December.	3,000	4 00	....	....	
1855	DAVENPORT	Iowa.	56,000	100	—	Do.	6,000	5 00	....	....	
1848	DAYTON	O.	50,000	25	5	February & August.	8,000	3 50	....	.. .	
1858	DEDHAM	Mass.	40,000	50	—	January & July.	3,000	4 00	....	....	
1860	DELAWARE	O.	30,000	25	—	Do.	2,500	3 00	....	....	
1849	DETROIT	Mich.	500,000	50	5	Do.	30,000	3 50	160	150	Excellent Stock. No sales.
1860	DOBBS' FERRY	N. Y.	25,000	—	—	Do.	3,000	4 00	....	....	
1854	DORCHESTER	Mass.	150,000	100	—	Do.	14,000	4 00	....	....	
1859	DOVER	Del.	12,000	—	—	Private Works.	2,000	4 00	....	....	
	DOVER	N. H.				January & July.			....	....	
1857	DOYLESTOWN	Pa.	50,000	—	—	Do.	3,000	4 00	....	....	
1854	DUBUQUE	Iowa.	50,000	115	3½	Do.	17,000	4 50	....	115	This stock is wanted at par.
1853	EAST BOSTON	Mass.	133,000	25	4	Do.	20,000	3 50	....	145	No transactions.
1858	EAST GREENWICH	R. I.	11,200	100	15	Do.	3,000	7 00	....	....	
1861	EAST HAMPTON	Mass.	10,000	25	—	Do.	5,000	9 00	....	....	
1861	EAST NEW YORK	N. Y.	50,000	50	—	Do.	12,000	3 50	....	....	
1857	EASTON	Md.	9,000	10	—	Do.	1,500	7 00	....	....	
1850	EASTON	Pa.	125,000	50	4	June & December.	6,000	3 60	....	....	
1856	EASTPORT	Me.	50,000	55	—	Do.	3,000	4 00	....	....	
1855	ELIZABETH	N. J.	100,000	20	4	January & July.	14,000	3 50	....	....	
	ELLICOTT'S MILLS	Md.	10,000	—	—	Do.	4,000	4 00	....	....	
1859	ELMIRA	N. Y.	50,000	25	3½	Do.	5,000	4 00	....	...	
1859	ERIE	Pa.	68,000	50	3½	June & December.	10,000	3 00	....	....	
1853	EVANSVILLE	Ind.	60,000	50	4	January & July.	12,000	4 00	110	....	
	EXETER	N. H.	60,000	—	—	Do.	12,000		.. ..	...	A very good Company.
	FAIR HAVEN	Ct.	20,000	25		Do.	8,000	4 00	....	....	
1847	FALL RIVER	Mass.	26,000	—	—	Private Works.	12,000	3 50	....	....	
1859	FAYETTEVILLE	N. C.	25,000	100	6	January & July.	7,000	6 00	....	....	
	FIFTH WARD (Milwaukee)	Wis.	50,000	25	—	Do.	10,000	4 00	....	....	
1857	FISHKILL	N. Y.	10,000	20	—	April & October.	1,500	9 00	....	....	
1853	FITCHBURG	Mass.	100,000	50	3	January & July.	5,000	4 00	....	....	Make Petroleum-G s.
1859	FLEMINGTON	N. J.	20,000	—	—	Do.	3,000	4 00	....	....	
1855	FLUSHING	N. Y.	20,000	50	1½	March & September.	6,500	4 00	...	....	
1858	FOLSOM	Cal.							....	....	
	FORT WAYNE	Ind.	40,000	25	—	Do.	6,000	4 00	....	...	
1851	FRANKFORT	Ky.	50,000	—	—	City Works.	5,500	4 50	...	....	
1851	FREDERICK CITY	Md.	36,000	100	—	January & July.	5,000	6 70	....	....	
1854	FREDERICKSBURG	Va.	72,500	50	5	Do.	4,500	4 00	....	....	
1858	FREDONIA (Natural Gas)	N. Y.	10,000	100	—	Do.	2,000	4 00	....	....	Unlimited supply of Natural Gas.
1864	FREEPORT	Ill.	20,000	100	—	May & November.	10,000	4 00	....	....	

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When Chartered.	Town.	State.	Chartered Capital.	Par Val. Per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1859	Fremont	O.	$25,000	25	—	May & November.	2,000	4 50	....	....	
1858	Fulton	N. Y.	12,000	100	—	Do.	4,000	7 00	....	....	
1855	Galena	Ill.	70,000	100	—	Do.	8,000	4 00	....	....	
1859	Galion	O.	25,000	25	—	January & July.	1,800	3 00	....	....	
1858	Galveston	Texas.	150,000	50	—	May & November.	7,000	6 00	....	....	
1854	Gardiner	Me.	100,000	50	4	Do.	8,000	4 00	....	....	
1853	Geneva	N. Y.	75,000	25	2½	Do.	6,000	4 00	.....	....	
1851	Germantown	Pa.	Merged	into	the	Philadelphia Works.	12,000	2 25	....	....	
1859	Gettysburg	Pa.	20,000	50	3	January & July.	2,500	4 00	....	....	
1854	Glenn's Falls	N. Y.	35,000	50	3	February & August.	4,000	4 00	....	....	
1854	Gloucester	Mass.	40,000	50	—	January & July.	5,000	3 50	....	....	
1857	Gloversville	N. Y.	15,000	25	—	Do.	3,000	3 50	....	....	
1858	Grand Rapids	Mich.	450,000	20	—	Do.	3,000	4 00	....	....	
1855	Great Barrington	Mass.	5,000	100	5	April & October.	2,000	7 00	....	....	
1849	Great Falls	N. H.	50,000	100	3	Do.	3,000	4 00	....	....	
1860	Greenfield	Mass.	20,000	50	2	January & July.	2,500	4 00	....	....	Close corporation.
1858	Greenpoint	N. Y.	100,000	50	5	Do.	20,000	3 00	....	....	
1859	Greensboro'	N. C.	12,000	50	—	April & October.	3,000	7 00	....	....	
1858	Greensburg	Pa.	30,000	25	3	May & November.	2,000	3 00	....	....	
1854	Hagerstown	Md.	15,000	20	—	January & July.	2,000	6 00	....	....	
	Hamilton	O.	15,000			Do.			....	....	
1859	Hannibal	Mo.	100,000	100	—	Do.	6,000	3 50	....	....	
1857	Harlem	N. Y.	350,000	50	3½	Do.	25,000	3 00	....	145	
1855	Harrisburg	Pa.	100,000	—	4	Do.	5,000	4 00	....	....	
1849	Hartford	Ct.	200,000	25	4	Do.	25,000	3 00	150	140	Stock in demand.
	Hastings	N. Y.				Do.	8,000	4 00	...	....	
1853	Haverhill	Mass.	50,000	50	—	Do.	5,000	4 00	....	....	
1859	Haverstraw	N. Y.	20,000	100	—	Do.	5,000	4 00	....	....	
1861	Hayesville	Mass.	15,000	25		Do.	4,000	4 00	....	....	
1859	Hempstead	N. Y.	16,000	25	—	Do.	1,000	4 00	....	....	
1862	Hoboken	N. J.	100,000	25	3	Do.	30,000	2 50	...	100	Works not yet built.
1856	Hollidaysburg	Pa.	30,000	25	2	Do.	4,000	3 50	....	....	
1861	Holyoke	Mass.	20,000	25	—	Do.	3,000	4 00	....	....	
1861	Homer & Cortlandt	N. Y.	40,000	100	—	Do.	6,000	4 00	....	....	
1854	Honesdale	Pa.	30,000	25	3	Do.	2,500	4 00	...	....	
1860	Hornellsville	N. Y.	12,000	50	—	Do.	2,000	4 00	....	....	
1858	Hudson	N. Y.	50,000	100	3½	February & August.	3,000	4 00	....	....	
	Hunter's Point	N. Y.									
1857	Huntington	Pa.	18,000	50	3	Do.	2,000	3 50	....	....	
1856	Huntsville	Ala.	7,325	25	—	June & December.	2,000	5 00	....	....	
	Indianapolis	Ind.	150,000	—	—	Do.	15,000	5 00	....	....	
1857	Iowa City	Iowa.	40,000	50	—	February & August.	4,000	4 50	....	....	
1852	Ithaca	N. Y.	75,000	25	3½	January & July.	6,000	4 00	....	....	
1857	Jackson	Mich.	25,000	50	5	Do.	6,000	3 50	....	....	
	Jackson	Miss.	80,000	50	—	Do.	4,000	4 50	....	....	
	Jackson	Cal.	50,000	30	—	Do.	4,000	10 00	....	....	
	Jacksonville	Flor.	30,000	20	—	Do.	2,000	7 00	....	....	
	Jacksonville	Ind.	50,000	50	—	Do.	4,000	5 00	....	....	
1858	Jacksonville	Mo.	25,000	25	—	Do.	7,000	6 00	....	....	
1856	Jamaica	N. Y.	20,000	—	4	Do.	6,000	4 00	....	....	
1858	Jamaica Plain	Mass.	75,000	100	3½	Do.	3,000	3 50	....	....	
	Jamestown	N. Y.	25,000	—	—	Do.	4,000	4 00	....	....	
1856	Janesville	Wis.	50,000	100	—	Do.	12,000	4 00	....	....	
	Jeffersonville	Md.	30,000	25		Do.	4,000	4 00	....	....	
1859	Jersey City	N. J.	300,000	—	5	Do.	30,000	3 00	150	....	No sales since formation of Hoboken Co.
1858	Jersey Shore	Pa.	15,000	25	—	Do.	2,000	3 70	....	....	
1856	Johnstown	Pa.	80,000	25	3	Do.	8,000	3 00	....	....	
1857	Joliet	Ill.	300,000	100	—	June & December.	6,000	4 00	....	....	
1858	Kalamazoo	Mich.	30,000	50	5	Do.	10,000	4 00	....	....	
1860	Keene	N. H.	60,000	100	—	Do.	4,500	4 00	....	....	
1855	Keokuk	Iowa.	100,000	100	—	January & July.	10,000	4 50	....	....	
1853	Kingston	Pa.	50,000	50	—	Do.	3,000	4 00	....	....	
1859	Kittanning	Pa.	20,000	—	—	Doubtful.	5,000	4 00	....	....	Said to be a fraud.
1854	Knoxville	Tenn.	63,000	—	—	April & October.	4,000	5 00	....	....	
1860	Laconia	N. H.	20,000	100	—	Do.	4,000	6 00	....	....	
1859	La Crosse City	Wis.	100,000	50	—	June & December.	10,000	8 00	....	....	Petroleum and Wood Gas.
1854	Lafayette	Ind.	60,000	50	4	January & July.	10,000	3 25	....	....	
1856	Lambertville	N. J.	30,000	25	—	Do.	2,600	4 00	....	....	
1849	Lancaster	Pa.	100,000	50	4	Do.	10,000	3 00	....	....	
1856	Lancaster	O.	25,000	100	5	Do.	5,000	3 50	....	....	
1855	Lansinburg	N. Y.	25,000	100	—	Private Works.	7,000	4 00	....	....	
1849	Lawrence	Mass.	200,000	100	4	February & August.	15,000	3 50	....	....	
1859	Leavenworth	Kansas.	200,000	25	—	Private Works.	15,000	4 00	....	....	
1856	Lebanon	Pa.	26,000	50	—	February & August.	5,000	4 00	....	....	
1861	Le Roy	N. Y.	25,000	50	—	Do.	4,000	4 00	....	....	
1858	Lewisburg	Pa.	20,000	100	—	January & July.	4,000	4 00	....	....	
1852	Lewiston	Me.	100,000	100	3	Do	10,000	3 20	....	....	
1856	Lewistown	Pa.	30,000	50	3	April & October.	3,000	3 10	....	....	
1853	Lexington	Ky.	100,000	25	4	January & July.	5,000	4 00	....	....	
1853	Little Falls	N. Y.	112,000	25	—	Do.	3,500	7 00	....	....	
1861	Little Rock	Ark.	20,000	—	—	Do.	5,000	6 00	....	....	
1858	Lockhaven	Pa.	28,000	—	—	Do.	3,000	4 00	....	....	
	Lockport	N. Y.	100,000	50	—	Do.	4,000	4 00	....	....	
	Logansport	Ind.	40,000		5	April & October.	5,000	4 00	165		But $481,400 stock has been sold. This Company has a large contingent fund and undivided profit on hand.
1838	Louisville	Ky.	600,000	50	6	January & July.	80,000	2 50	125	....	
1849	Lowell	Mass.	200,000	25	5	Do.	50,000	3 25	....	....	
1852	Lynchburg	Va.	70,000	25	5	Do.	6,000	3 80	....	....	
1852	Lynn	Mass.	55,000	50	4	Do.	20,000	4 00	....	....	
1859	Lyons	N. Y.	80,000	100	—	Do.	4,000	4 00	....	....	
1852	Macon	Ga.	75,160	25	6	Do.	5,000	5 00	....	....	
1851	Madison	Ind.	160,000	25	3	Do.	10,100	3 50	....	....	
1855	Madison	Wis.	100,000	25	—	Do.	5,000	5 00	....	....	
1854	Malden & Melrose	Mass.	50,600	25	3	February & August.	5,000	4 00	....	....	
1852	Manayunk	Pa.	40,000	100	—	Do.	7,000	4 00	....	....	
1852	Manchester	N. H.	100,000	100	5	January & July.	25,600	3 00	....	....	
1830	Manhattan (N. Y. City)	N. Y.	4,000,000	50	5	Do.	600,000	2 50	....	....	
	Mansfield	O.	25,000	—	—	Do.	10,000	4 00	....	....	
1854	Marblehead	Mass.	40,000	100	3	Do.	1,000	4 00	....	....	
	Marlboro'	Mass.	20,000	—	—	Do.	8,000	4 00	....	....	
	Mauch Chunk	Pa.	50,000	50	—	Do.	7,000	4 00	....	....	
1857	Marietta	O.	50,000	50	—	Do.	7,000	4 00	....	...	Stock firm.
1860	Marion	O.	12,000	25	5	April & October.	1,500	13 55	....	....	
1858	Marysville	Cal.	50,000	100	—	January & July.	4,000	2 50	....	....	
1857	Massilon	O.	20,000	25	—	Do.	5,000	3 00	....	....	
1855	Meadville	Pa.	39,500	25	—	Do.	4,000	3 50	....	....	
	Medina	N. Y.	2,000	100	—	Do.	2,000	7 00	....	....	
1852	Memphis	Tenn.	300,000	100	5	June & December.	12,000	3 50	....	....	
	Meriden	Ct.	20,000			Do.			....	....	
1859	Metropolitan (N. Y. City)	N. Y.	1,000,000	100	—	January & July.	200,000	2 50	....	....	
1859	Middleboro'	Mass.	15,000	—	—	Private Works.		6 00	....	....	
1858	Middletown	Ct.	50,000	25	3	March & September.	5,000	3 80	....	....	Owned by G. T. Sutton.
	Middletown	N. Y.		25	—	Private Works.	3,000	3 00	....	....	
	Milford	Mass.	20,000	—	—	Do.		4 00	....	....	
	Milledgeville	Ga.	100,000	50	—	Do.		5 00	....	....	
	Milton	Pa.	10,000			Do.			....	....	
1847	Milwaukee	Wis.	400,000	50	5	January & July.	24,000	3 50	150	....	
1852	Mobile	Ala.	200,000	—	—	Do.	30,000	4 50	....	....	
1836	Monroe	Mich.	40,000	50	—	Do.	5,000	3 50	50	....	
1852	Montgomery	Ala.	100,000	25	4	February & August.	7,000	6 00	....	....	
1856	Montpelier	Vt.	30,000	25	3	January & July.	5,000	4 50	....	....	
1859	Morrisania	N. Y.	30,000	50	—	Do.		4 00	....	....	
1859	Morristown	N. J.	18,000	50	—	Do.	3,500	4 00	....	....	
1854	Mount Holly	N. J.	16,650	25	3	April & October.	2,000	7 00	....	....	
	Mount Vernon	O.	50,000	100	—	Do.		4 00	....	....	
1857	Muscatine	Iowa.	50,000	100	—	January & July.	3,000	4 50	...	....	
1854	Nantucket	Mass.	50,000	100	3	February & August.	6,000	4 00	....	....	

GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-Ann'l Div.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1852	Nashua	N. H.	45,000	50	3½	January & July.	10,000	3 50	....	....	
1850	Nashville	Tenn.	200,000	50	5	Do.	25,000	3 50	....	....	
1858	Natchez	Miss.	46,000	50	—	Do.	20,000	5 00	....	....	
	Nevada City	Cal.							....	....	
1852	New Albany	Ind.	200,000	50	3½	Do.	16,000	3 50	....	....	
1846	Newark	N. J.	362,000	50	5	Do.	45,000	3 62	130	....	Always a favorite stock.
1856	Newark	O.	30,000	100	—	Do.	7,000	5 40	....	....	
1852	New Bedford	Mass.	130,000	100	5	Do.	15,000	2 90	102	....	Well managed and kept quiet.
1859	Newbern	N. C.	22,000	100	6	Do.	6,000	3 50	....	....	
	New Britain	Ct.	30,000	20	5	Do.	3,000	4 00	....	....	
1851	New Brunswick	N. J.	100,000	20	4	Do.	8,000	3 00	115	....	
1852	Newburg	N. Y.	67,000	20	4	Do.	10,000	4 00	105	....	
1852	Newburyport	Mass.	150,000	10	4	Do.	9,000	4 00	92½	....	
1857	Newcastle	Del.	32,300	10	3	Do.	4,000	4 00	90	....	
1847	New Haven	Ct.	250,000	25	4	Do.	30,000	3 00	155	....	None in market.
1853	New London	Ct.	70,000	50	3	Do.	12,000	4 00	105	....	
1835	New Orleans	La.	1,500,000	100	6	Do.	120,000	4 00	180	....	
1853	Newport	R. I.	130,200	100	4	Do.	10,000	3 50	112	....	
1854	Newton & Watertown	Mass.	300,000	100	2	Do.	10,000	4 00	....	....	
	Newton	N. J.	30,000	—	—	Do.	3,000	4 00	....	....	
	Newton	Pa.	20,000	50	—	Do.	2,500	4 00	....	....	
	Newtown	N. Y.									
1828	New York	N. Y.	1,000,000	50	5	May & November.	100,000	2 50	300	....	
1859	Niagara Falls	N. Y.	15,000	25	—	Do.	3,000	4 00	90	....	
	Norfolk	Va.	60,000	25	—	Do.	40,000	4 00	....	....	
1853	Norristown	Pa.	41,700	25	4	June & December.	8,000	3 50	....	....	
1855	North Attleboro'	Mass.	50,000	100	3½	Do.	6,000	4 00	....	....	
	Northern Liberties	Pa.	400,000	25	7	City Works.	40,000	2 50	....	....	
	North Adams	Mass.	25,000	—	—	March & September.	30,000	4 00	....	....	
1856	Northampton	Mass.	35,000	25	3	January & July.	4,500	4 00	....	....	
1859	North Bridgewater	Mass.	16,000	100	4	June & December.	1,000	7 00	....	....	
1856	Norwalk	Ct.	30,000	150	4	February & August.	6,000	4 00	....	....	
1859	Norwalk	O.	30,000	25	—	January & July.	4,000	4 00	....	....	
1854	Norwich	Ct.	75,000	25	3½	Do.	12,000	3 50	....	....	
1861	Norwich	N. Y.	12,000	50	—	Do.	2,500	4 00	....	....	
1859	Nyack	N. Y.	20,000	100	—	Do.	2,500	4 00	....	....	
1860	Oberlin	O.	10,000	—	—	Do.	1,200	4 00	....	....	
1855	Ogdensburg	N. Y.	75,000	50	5	Do.	9,000	4 00	....	....	
1859	Orange	N. J.	65,000	25	—	Do.	6,000	3 50	....	....	
1852	Oswego	N. Y.	81,250	100	3½	Do.	15,000	4 00	105	....	
1855	Ottawa	Ill.	45,000	100	6½	Do.	6,000	4 00	....	....	Good works, built by Hoy, Jr., & Kennedy.
1856	Owego	N. Y.	40,000	50	3½	Do.	5,000	4 00	....	....	
1860	Owensboro'	Ky.	25,000	25	—	Do.	4,000	3 50	....	....	
1856	Paducah	Ky.	75,000	100	—	May & November.	4,000	5 00	....	....	
1861	Painsville	O.	40,000	25	5	Do.	2,500	5 00	....	....	
1856	Palmyra	N. Y.	12,000	25	—	January & July.	3,000	7 00	....	....	
1847	Paterson	N. J.	125,000	25	3	Do.	20,000	3 50	95	....	
1850	Pawtucket	R. I.	75,000	50	4	Do.	12,000	3 00	....	....	
1855	Peekskill	N. Y.	31,000	50	3	June & December.	4,000	4 00	....	....	Surplus $10,000, May 15, 1863.
1860	Penn Yan	N. Y.	12,000	50	5	Do.	3,000	4 00	....	....	Works leased to Gilbert T. Sutton.
1859	Peoples', Chicago	Ill.	500,000	50	New	Do.	100,000	2 50	....	....	
1855	Peoria	Ill.	100,000	50	4	Do.	8,000	3 50	....	....	What is this Company doing?
1852	Petersburg	Va.	120,000	—	5	January & July.	20,000	3 80	....	....	
1841	Philadelphia	Pa.	3,000,000	50	—	City Works.	650,000	2 50	....	....	
1855	Piqua	O.	50,000	50	—	January & July.	6,500	4 00	....	....	
1835	Pittsburg	Pa.	300,000	100	5	Do.	60,000	1 50	115	....	
1854	Pittsfield	Mass.	50,000	100	5	Do.	4,500	4 00	....	....	
1858	Placerville	Cal.	30,000	50	—	Do.	4,500	10 00	....	....	
1860	Plainfield	N. J.	25,000	50	—	Do.	2,500	4 00	....	....	
1859	Plattsburg	N. Y.	16,000	50	—	January & July.	5,000	7 00	....	....	
1858	Plymouth	Mass.	40,000	100	—	April & October.	8,000	4 00	....	....	
1860	Port Chester	N. Y.	50,000	50	—	Do.	4,000	4 00	....		
1860	Port Jervis	N. Y.	20,000	100	—	Do.	3,000	4 10	....	....	
1849	Portland	Me.	300,000	50	4	January & July	30,000	3 00	....	....	
1859	Portland	Oreg.	50,000	50	—	Do.	3,500	8 00	....	....	
1859	Port Lavacca	Texas.	50,000	100	—	Do.	2,500	7 00	....	....	
1851	Portsmouth	N. H.	70,000	100	3	April & October.	6,500	3 70	....	....	
1855	Portsmouth	O.	50,000	50	4	January & July.	10,000	3 50	....	....	
1855	Portsmouth	Va.	100,000	50	4	Do.	4,000	4 00	....	....	
1856	Pottstown	Pa.	20,000	50	3	Do.	3,500	4 00	....	....	
1850	Pottsville	Pa.	110,000	50	2	Do.	10,000	3 50	....	....	
1850	Poughkeepsie	N. Y.	84,000	25	4	March & September.	15,000	3 50	120	110	
1848	Providence	R. I.	1,000,000	50	4	January & July.	60,000	3 00	122	....	
1853	Quincy	Ill.	300,000	50	4	June & December.	12,000	3 50	....	....	
	Quincy	Mass.	60,000	00	—	Do.	60,000	0 00	....	....	
1855	Racine	Wis.	43,500	26	—	Do.	7,000	3 50	....	....	
1857	Rahway	N. J.	50,000	20	—	January & July.	5,000	4 00	....	....	
1856	Raleigh	N. C.	25,000	100	6	May & Novrmber.	5,000	6 00	....	....	
1848	Reading	Pa.	100,000	25	4	January & July.	25,000	3 00	....	....	
1851	Richmond	Va.	341,975	—	—	City Works.	30,000	3 00	....	....	Jeff. Davis has extinguished the gas-lights of Richmond, Va.
1859	Richmond	Mass.	40,000	25	—	January & July.	3,000	4 00	....	....	
	Richmond County	N. Y.									
1859	Ripley	O.	25,000	50	—	April & October.	2,000	4 00	....	....	
1852	Rochester	N. Y.	200,000	50	5	January & July.	50,000	2 50	....	....	
1857	Rockford	Ill.	40,000	50	—	Do.	4,000	4 00	....	....	
1854	Rock Island	Ill.	100,000	50	—	Do.	6,000	4 50	....	....	
1854	Rockland	Me.	50,000	100	—	Do.	6,000	4 40	....	....	
1852	Rome	N. Y.	85,000	100	3½	Do.	10,000	3 60	....	....	
1854	Rondout and Kingston	N. Y.	65,150	20	3½	June & December.	10,000	3 80	....	....	
1854	Roxbury	Mass.	150,000	100	5	January & July.	20,000	3 50	....	....	
1859	Rutland	Vt.	20,000	25	—	Do.	4,000	3 50	....	....	
	Saco	Me.	71,600	100	3½	April & October.	8,000	4 00	....	....	
1857	Sacramento	Cal.	500,000	100	—	Do.	40,000	10 00	....	....	
1859	Sag Harbor	N. Y.	20,000	—	—	Do.	4,000	4 00	....	....	
1856	Saint Albans	Vt.	15,000	20	—	Do.	3,000	7 00	....	....	
	Saint Johnsbury	Vt.	30,000	25	—	Do.	4,000	4 00	....	....	
1857	Saint Joseph	Mo.	50,000	100	5	January & July.	6,000	5 00	....	....	
1859	Saint Louis	Mo.	600,000	50	—	June & December.	180,000	3 50	....	....	
1857	Saint Paul	Min.	200,000	50	3	January & July.	10,000	6 00	....	....	Surplus $10,000, May 15, 1863.
1856	Salem	N. J.	30,000	25	3	Do.	5,000	3 86	....	....	
1850	Salem	Mass.	200,000	100	4	February & August.	30,000	3 24	....	....	
1859	Salem	O.	25,000	20	—	Do.	3,000	3 00	....	....	
1859	Salisbury	N. C.	14,600	50	6	May & November.	3,500	6 00	....	....	
	Salisbury Mills	Mass.	1,250	25	—	Do.	3,000	4 00	....	....	
	Salmon Falls	Me.	25,000	100	—	Do.	3,000	4 00	....	....	
	San Antonio	Texas.	75,000	20	—	Do.	40,000	6 00	....	....	
1854	Sandusky	O.	75,000	50	—	April & October.	9,000	3 00	....	....	
1859	Sandwich	Mass.	10,000	—	—	Private Works.	2,000	3 50	....	....	
1852	San Francisco	Cal.	2,000,000	100	4½	Do.	100,000	6 50	100	....	
	San Jose	Cal.							....	....	
1858	Saratoga Springs	N. Y.	39,000	100	—	January & July.	6,000	3 60	70	....	
	Sauquetties	N. Y.	30,000	20	—	Do.	4,000	3 00	....	....	
1849	Savannah	Ga.	200,000	25	5	Do.	10,000	3 75	....	....	
1851	Schenectady	N. Y.	50,000	—	—	Private Works.	11,000	4 00	....	....	
1858	Scranton, Gas and Water	Pa.	100,000	25	—	January & July.	6,000	3 80	....	....	About trying Water-Gas.
1857	Selma	Ala.	20,000	100	—	Do.	2,000	5 00	....	....	
1856	Seneca Falls and Waterloo	N. Y.	80,000	50	3	Do.	10,000	4 00	100	....	
	Shreveport	La.	40,000	25	—	Do.	3,000	0 50	....	....	
1858	Sing Sing	N. Y.	40,000	100	—	Do.	3,000	3 50	....	....	
	Smyrna	Del.						4 00	....	....	Petroleum Gas.
1860	South Adams	Mass.	10,000	25	—	Do.	3,000	4 00	....	....	
1859	South Bridge	Mass.	5,000	25	—	Do.	4,010	6 00	....	....	
	South Boston	Mass.	200,000	50	—	Do.	60,000	3 25	110	....	
	Springfield	O.	200,000	100	—	Do	20,000	3 50	....	....	
1854	Springfield	Ill.	75,000	50	—	January & July.	10,000	3 50	....	....	
1848	Springfield	Mass.	100,000	500	5	February & August.	10,000	3 60	140	....	
1856	Stamford	Ct.	6,250	25	5	April & October.	3,000	3 50	....	....	
1837	Staten Island	N. Y.	150,000	50	5	January & July.	28,000	4 00	95	....	

GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1859	Staunton	Va.	18,000	50	6	January & July.	4,000	7 00	....	....	
	Steubenville	O.	150,000	100	—	Do.	15,000	4 00	....	....	
	Stockton	Cal.	50,000	—	—	Do.	8,000	10 00	....	....	
1848	Syracuse	N. Y.	125,000	25	5	March & September.	25,000	3 00	112	....	
	Tamaqua	Pa.	40,000	25	—	Do.	3,000	4 00	....	....	
1859	Tarrytown and Irvington	N. Y.	70,000	50	—	January & July.	3,000	4 00	....	....	
1853	Taunton	Mass.	100,000	50	4	Do.	10,000	4 00	....	....	
	Terre Haute	Ind.	100,000	100	—	Do.	3,000	4 00	....	....	
	Thompsonville	Ct.	25,000	50	—	Do.	4,000	4 50	....	....	
	Tiffin	O.	25,000	20	—	Do.	4,000	4 00	....	....	
1853	Toledo	O.	100,000	50	3	Do.	8,000	3 50	....	....	
1847	Trenton	N. J.	100,000	20	4	Do.	15,000	3 42	....	110	
1848	Troy	N. Y.	200,000	100	4	June & December.	35,000	3 00	160	....	
1856	Urbana	O.	30,000	25	—	April & October.	3,500	4 00	....	....	
1849	Utica	N. Y.	80,000	100	4	Do.	22,000	3 60	....	....	
1858	Vicksburg	Miss.	66,000	50	—	March & September.	4,000	4 50	....	....	
1859	Vincknes	Ind.	25,000	100	—	January & July.	2,000	4 00	....	....	
1863	Virginia City	N. T.					20,000				
1838	Walden	N. Y.	2,500	—	—	Private Works.	1,000	6 00	....	....	
1853	Waltham	Mass.	100,000	100	4	January & July.	3,000	4 00	....	....	
1857	Ware	Mass.	30,000	20	—	Do.	3,500	4 00	....	....	
1861	Warren	O.	30,000	50	—	Do.	4,000	3 00	....	....	
1854	Warren	R. I.	20,000	25	—	Do.	3,000	4 00	....	....	
1855	Washington	D. C.	500,000	20	5	Do.	50,000	2 61	150	148	
1859	Washington	N. C.	15,000	100	—	April & October.	1,500	6 00	....	....	
1848	Washington	Pa.	20,000	25	4	January & July.	4,000	3 00	....	....	
1854	Waterbury	Ct.	100,000	25	—	Do.	4,000	4 00	....	....	
1852	Waterford	N. Y.	12,000	25	—	Do.	4,000	4 00	....	....	
1852	Watertown	N. Y.	20,000	100	—	Do.	10,000	7 00	....	....	
1856	Watertown	Wis.	25,000	100	—	Do.	5,000	5 00	....	....	
1858	Wautoma	Wis.	30,000	50	—	Do.	3,000	4 50	....	....	
1857	Waverly	Miss.	20,000	100	—	April & October.	4,000	5 00	....	....	
1854	West Cambridge	Mass.	60,000	100	—	February & August.	10,000	4 00	....	....	
1852	Westchester	Pa.	100,000	25	2½	Do.	3,500	3 50	....	....	
	Westfield	Mass.	25,000	100	6	Do.	4,000	4 00	....	....	
	Weston	O.	20,000	25	—	Do.		5 00	....	....	
1857	West Point	N. Y.	50,000	—	—	United States Military	Academy.	2 00	....	....	
1858	West Troy	N. Y.	100,000	50	3	January & July.	10,000	3 60	85	....	
1850	Wheeling	Va.	75,000	25	6	Do.	12,000	2 70	....	....	
	White Plains	N. Y.	20,000	20	—	Do.			....	....	
1856	Wilkesbarre	Pa.	50,000	50	—	May & November.	4,000	3 33	100	80	
1850	Williamsburg	N. Y.	1,000,000	50	5	January & July.	60,000	3 00	....	....	
1858	Williamsburg	Va.	30,000	25	—	Do.	3,000	4 00	....	....	Camp-fires of the Union Army light up this place at present.
1857	Williamsport	Pa.	70,000	25	4	Do.	3,500	3 80	....	....	
1859	Willimantic	Ct.	12,000	—	—	Do.	2,500	3 50	....	....	
1858	Wilmington	N. C.	60,000	50	5	Do.	8,000	5 00	....	....	
1852	Wilmington	Del.	200,000	50	5	February & August.	20,000	3 00	....	....	
1854	Winchester	Va.	36,000	50	6	January & July.	5,000	4 00	....	....	
1861	Windsor	Vt.	20,000	25		Do.	2,000	6 00			Make Petroleum Gas.
	Woburn	Mass.	20,000	—	—	Do.	3,000	4 00	....	....	
1856	Woodstock	Vt.	10,000	50	4	Do.	4,000	6 00	....	....	
1853	Woonsocket	R. I.	82,600	100	4	April & October.	4,000	3 50	....	....	
1856	Wooster	O.	25,000	50	—	January & July.	6,000	3 00	....	....	
1849	Worcester	Mass.	160,000	100	5	Do.	15,000	3 50	....	....	
1855	Xenia	O.	40,000	50	—	Do.	3,000	4 00	....	....	
1854	Yonkers	N. Y.	100,000	50	3½	Do.	10,000	3 50	110	16½	
1849	York	Pa.	40,000	57	3	June & December.	10,000	3 50	....	....	
	Yorkville	S. C.	20,000	25	—	Do.	4,000	4 00	....	....	
1858	Ypsilanti	Mich.	20,000	50	5	February & August	6,000	14 00	....	....	
1850	Yreka	Cal.	30,000	100	—	Do.	2,000	0 00	....	....	
1848	Zanesville	O.	44,600	25	4	Do.	10,000	3 00	....	....	

GAS-LIGHT COMPANIES IN THE BRITISH PROVINCES OF NORTH AMERICA.

When Chartered.	Town.	Province	Chartered Capital.	Par Val. per Sh. $	Semi-An'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1854	Belleville	C. W.	33,040	100	4	January & July.	1,200	5 00	....	....	
1854	Brantford	C. W.	32,000	100	2½	Do.			....	....	
	Brockville	C. W.	50,000	—	—	Do.	5,000	4 00	....	....	
	Chatham	N. B.	50,000	—	—				....	....	
1854	Charlotte Town	P. E. I.	50,000	100	5	Do.	3,000	3 50	....	....	
1857	Cobourg	C. W.	30,000	—	-	February & August.	4,000		....	....	
	Dundas	C. W.	30,000	—	—	Do.	6,000	4 00	....	....	
	Frederick	N. B.	50,000	—	—	Do.			....	....	
1843	Halifax	N. S.	160,000	40	7	May.	30,000	3 00	....	....	
1850	Hamilton	C. W.	125,000	40	5	March & September.	20,000	3 50	....	....	
1848	Kingston	C. W.	80,000	100	—	Do.	6,000	3 50	....	....	
1853	London	C. W.	100,000	20	5	May & November.	5,000	5 00	....	....	
1847	Montreal	C. E.	460,000	40	—	March & September.	110,000	2 80	....	118	Last sale at this figure.
1854	Ottawa	C. W.	40,000	40	5	Do.	5,000	4 50	....	....	
1859	Point Levi	C. E.	25,000	25	—	January & July.	4,000	3 50	....	....	
1859	Port Hope	C. W.	28,000	20	4	May & November.	4,500	3 50	....	....	
1847	Quebec	C. E.	200,000	200	4	January & July.	60,000	3 00	....	....	
1848	Saint Catherine's	C. W.	80,000	20	—	May & November.	7,000	4 50	....	....	
1859	Saint Hyacinthe	C. E.	15,000	20	—	Do.	4,000	4 00	....	....	
	Saint John	N. B.	170,000	85	4	June & December.	25,000	3 00	110	110	Sales at this figure.
	Saint John's	N. F.	50,000	—	4	Do.	30,000		....	....	
1858	Sorel	C. E.	14,000	20	4	Do.	4,000	3 00	....	....	
1848	Toronto	C. W.	400,000	50	—		50,000	3 00	....	....	This Co. pay a quarterly div. of 2 per ct.

GAS-LIGHT COMPANIES IN CUBA, MEXICO, SOUTH AMERICA AND NEW ZEALAND.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-An'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
	Callao	Chile.		—	—	January & July.	20,000	7 00	....	....	
	Cardenas	Cuba.	50,000	—	—	Do.	180,000	5 00	....	....	
1857	Compania Cubana	Hav'a.	500,000	500	10	Do.			....	....	
	Cienfugos	Cuba.		—	—	Do.	12,000	5 00	....	....	These four towns are lighted by the Compania Cubana of Havana.
	Guanabacoa	Cuba.		—	—	Do.	14,000	5 50	....	....	
	Regla	Cuba.		—	—	Do.	10,000	5 00	....	....	
	Trinidad	Cuba.		—	—	Do.	16,000	5 00	....	....	
	Guines	Cuba.		—	—	Do.			....	....	
	Guyaquil	S. A.	150,000	—	—	Do.	35,000		....	....	
	Havana	Cuba.	2,000,000	500	—	Quarterly.	200,000	5 00	....	175	
	Lima	Peru.	100,000	—	—	January & July.	150,000		....	....	
	Maranham (Chartered)			—	—	Do.			....	....	
	Matanzas	Cuba.	50,000	—	—	Do.	180,000	8 50	....	....	
	Mexico City	Mex.	550,000	—	—	Do.			....	....	
	Montevideo	S. A.	500,000	—	—	Do.			....	....	
	Para (Chartered)			—	—	Do.			....	....	
18 4	Rio de Janeiro	S. A.	1,000,000	500	7½	Do.	300,000	4 00	....	....	
	San Iago	Chile.	500,000	—	—	Do.	180,000	7 00	....	....	
1857	Saint Jago de Cuba	Cuba.	450,000	500	—	Do.	25,000	5 00	....	....	
	Valparaiso	Chile.	500,000	—	—	Do.	85,000	6 00	....	....	
	Vera Cruz	Mex	500,000	—	—	Do.			....	....	
	Ville Clara	Cuba.	50,000	—	—	Do.			....	....	
	Auckland	N. Z.		—	—	Do.			....	....	

THE BROOKLYN GAS-WAR.

MEETING OF CITIZENS OF SOUTH BROOKLYN—A "MUTUAL" GAS COMPANY TO BE STARTED—CAPITAL "TWO MILLIONS"—A "GAS CONSUMERS' PROTECTIVE UNION"—WAR DECLARED AGAINST THE OLD COMPANY.

A meeting of citizens of South Brooklyn, consumers of the Citizens' Gas Company, was held on Wednesday evening, at the Atheneum. Some five or six hundred persons were in attendance, sprinkled among whom were officers of the gas companies and well-known capitalists interested therein, who came to watch the development of this movement.

Mr. John N. Taylor called the meeting to order and nominated for chairman Mr. Nehemiah Knight. The nomination being confirmed, Mr. Knight took the chair, and the following list of Vice-Presidents and Secretaries was read:

Vice Presidents—Jeremiah P. Robinson, Jos. Center, Chas. Stanton, Smith Fancher, Wm. M. Thomas, Marquis D. Moore, Hugh Allen, John N. Taylor, Wm. Weston, Wm. Beard, Henry Hill, A. Thompson, Chas. Cooper, Wm. B. Barber, Thos. Sullivan, J. Walter Stoops, Jas. A. Van Brunt, Jos. Ash, John Williams, Jeremiah Curtis, Cornelius J. Sprague, Wm. E. Doubleday, Wm. Hubbard, C. Peters, D. S. Voorhies, W. A. Work, D. S. Baldwin, D. B. Hasbrouck, Chas. J. Shepard, Alex. McCuthnor, John W. Greaton.

Secretaries—G. P. Willey, E. Townsend, Wm. S. Gove, Philip Walters, Wm. Himrod, E. Dailey, A. H. Cunningham, D. B. McMullen.

The chairman stated that this was an adjourned meeting of the gas consumers. That at the meeting held December 23d a committee was appointed to take into consideration the grievances of the people against the gas company, and report what steps should be taken to protect themselves. The first business in order would be the reception of the report of that committee.

Mr. Taylor then came forward and read the

REPORT.

The Committee appointed at a meeting of the citizens of Brooklyn, held on the 23d day of December last past, for the purpose of considering the impositions practised upon them by the gas-light company of this city, and to suggest a suitable remedy therefor, respectfully report, that they have made careful inquiry into the several matters committed to them, and have seen no reason to abate one particle from the severity of the censure which was passed upon said company by the resolutions adopted at that meeting. The committee are of opinion that bad faith has been practised by the Citizens' Gas-Light Company towards the people of this city, as well as towards the Common Council, from which that company derived its license to carry on business; towards the people, by not continuing to furnish gas at the stipulated price, at 25 cents per 100 feet, as by delivering gas of a very inferior quality, and towards the Common Council, by violating the express condition upon which alone it received its license—a condition not to transfer its privilege to any other company. We consider, moreover, that the said company is highly censurable for neglecting to take more efficient means to deodorize the very noxious vapors produced at its manufactory, in the immediate neighborhood of some of the best improved property in the city.

We also charge that the Brooklyn Gas Company is equally censurable with the Citizens' Gas Company in dividing the city between them into two gas districts, so that neither can come in competition with the other, thereby establishing a complete monopoly, each in its own district, and depriving the consumers of the benefit which a healthy competition is calculated to produce, and which it was evidently the design of the Common Council to secure when it granted a license to the Citizens' Company. This odious monopoly of what has now become one of the necessaries of life, we deem to be the fruitful cause of most of the evils to which gas consumers are subjected, and falling as they do upon all classes of an abused community, richly deserves its sternest rebuke. The committee have good reason to believe, that with the recent improved modes of manufacturing gas, and of economizing the materials of which it is composed, nothing but the grasping avarice of the present gas companies prevents the people from having an abundant supply of good and cheap gas, for warming as well as for lighting their houses.

The remedy for these evils your committee believe to be within the reach of the people themselves, without reference to any legislative aid. It consists, first, in a vigorous application of laws now in force to compel both of the delinquent companies to return to their duty, and to a redemption of their pledges, after they shall have abandoned the unjust monopoly they have attempted to set up, and next in the immediate organization of a new gas company upon the mutual plan, which, by dividing up the net profits of its business among the consumers of gas, after paying the capitalists who advance their money a liberal compensation for its use, shall afford to every consumer a sure guarantee that he will not be charged more than a fair price for a good article, and that no profit can in fact be made out of the operation in which he does not himself participate. The laws of the State of New York have already prescribed the mode of organizing gas companies, and we are assured that a sufficient number of citizens stand ready to furnish all the capital that will be required to establish the The People's Mutual Gas-Light Company, and to share with the consumers in the profits to be derived therefrom. We cordially commend the new enterprise to the patronage and active co-operation of every consumer of gas within the boundaries of our city, satisfied that if it is well sustained the people will soon have good and cheap gas, and plenty of it.

But we do not purpose to leave the matter here. Much will remain for the people to do themselves before the present gas company can be brought to acknowledge that the rights of their dealers cannot be trampled on with impunity. And as experience has shown that a community can only act efficiently, whether towards a grievance or to prevent its recurrence, when properly organized and directed by trusty officers chosen by itself, the committee recommend that immediate steps be taken to organize an association of all gas consumers in the city, which shall not only assist in building up the new gas company, but shall also act from time to time in defense of their rights, as circumstances may require.

They have prepared a plan for such an organization upon the basis of a protective union, which they herewith submit, and without publicly recommending any definite action, from amongst the many feasible remedies which have been suggested to them, they prefer to leave the whole matter in the hands of the new organization, confident that discreet and efficient action will be promptly taken by the officers of the union who shall be entrusted with its execution.

On motion the report was accepted, and afterwards adopted.

Mr. Barnes then read the following resolution, which was adopted:

Resolved, That it is expedient to establish a gas-light company upon the mutual plan, to be called the "People's Mutual Gas-Light Company," with a capital of $2,000,000, and that the following gentlemen be requested to prepare and file a certificate of incorporation, and to act as the first board of directors:

Nehemiah Knight, Jeremiah P. Robinson, Wm. M. Thomas, Smith Fancher, William Beard, John N. Taylor, Hugh Allen, John C. Brigham, Thos. B. Shefield.

Mr. Taylor explained the nature of the resolution adopted. It was necessary, to procure the act of incorporation, that a certificate should be filed with the names of the corporators. Subscriptions would then be received to the capital stock, and the company go into operation. In the report, a "protective union" was recommended. Articles for such a union had been prepared, and would now be submitted.

One of the secretaries then read the following:

PLAN OF A PROTECTIVE ASSOCIATION.

We, the undersigned, do hereby form ourselves into an association to be called "The Gas Consumers' Protective Union of Brooklyn," and do declare as follows:

1. That the object of this association is to protect gas consumers of Brooklyn against all frauds and impositions of Gas-Light Companies.

2. Any person may become a member of this association by signing these articles and paying an initiation fee of fifty cents, and twenty-five cents dues, every three months thereafter.

3. The officers of this association shall be a President, Vice-President. Secretary, Treasurer, and Executive Committee of five, whose duties shall correspond with those of such officers in similar associations. They shall hold office for six months and until others are elected in their places.

4. The said officers and committee shall together form a finance committee, and no money shall be expended without the order of a majority of such finance committee.

The following gentlemen were named for officers of the Protective Union:

President—Joseph Center.

Vice-President—Nehemiah Knight.

Secretary—G. R. Wilday.

Treasurer—Wm. Hutchins.

Executive Committee—J. N. Taylor, M. D. Moore, Wm. Himrod, D. S. Voorhees, E. Daly.

Committee of Arrangements—Messrs. Barber, Hill and Stoops.

The articles and nominations were approved.

Mr. Barnes said there were now three gas companies in the city, and it is proposed to establish a fourth. To justify this undertaking it must be put upon the ground of public expediency. In the manufacture of gas, private competition was not practical; it must either be furnished by the people or by stock companies. In most localities it is furnished by stock companies. The speaker dwelt upon the profits made by gas companies; their stock was never to be found in the market and was held at a very high figure. Now this profit was a profit on an article of universal use and necessity, and was a tax on a class of people who can ill-afford to pay it. It would not be tolerated a moment to place our water supply under the same conditions: why, then, should the gas supply be restricted when it was an article of as general use? He based this movement on the principle of public economy. It is an article we were obliged to use, and if we could not have private competition we should be protected from private speculation. In Philadelphia the city owned the gas-works and furnished the people with gas; but from what we had heard, there was so much political log-rolling introduced into the management as to reduce the profits and destroy whatever benefit might otherwise have accrued to the people. What he urged was, that gas should be supplied at the lowest possible figure. The gentleman then dwelt upon the value of the mutual principle. If it had failed in the case of insurance companies in this country, it was because the principle was not adhered to. In England its advantages had become so universally recognized that it had superseded the old system of management of stock companies. Giving the Citizens' Gas-Light Company the credit of doing the best they could, it was impossible in the nature of things that they could receive the confidence of the people. They naturally consulted their own interests, as other companies had always done.

HOT SHOT FOR THE CITIZENS' GAS COMPANY.

Mr. Barber then came forward and spoke at some length. As an explanatory introduction, he informed the audience that he was in the habit of calling things by their right names, and held himself responsible for all he said. This excitement about gas was made up by individual cases of people who have been wronged and imposed upon by the gas company. He said the Citizens' Gas Company had been conceived in mischief and carried on in corruption, and he had proof enough of this charge to convict them before any jury in the land of fraud and imposition. He then recapitulated the proceedings of the company, illustrating his argument by his own case. The President of the "so-called" Citizens' Gas Company came to him, and asked him to take gas from them at two dollars per thousand feet. At that time the old company would have supplied him at $1 25, but the President convinced him by argument that it was necessary to sustain his company in order to keep up competition. He (Mr. Barber) suggested that the two companies might one day come together, and he would have to pay the old price, losing the difference between $2 and $1 25 for a year or two. But the President assured him that such an arrangement never would be made—never. But it had been made; and when this company got rid of

opposition. they charged enough to make up for all they had lost. The Citizens' Company had sold out all their mains north of Atlantic street, and the old company had sold all theirs south of Atlantic street; he spoke on the authority of Mr. Benson, President of the old gas company, The old company continued to charge $2 50; the Citizens' Company charged $3. He, for one, had resolved not to stand this; it was absolute swindling. Mr. Benson had told him that the works of the Citizens' Company, represented as costing one million dollars, never cost over four hundred thousand. The committee which had been engaged in ascertaining all the facts in connection with the gas companies, estimated that not less than six or seven hundred thousand dollars had been made out of the concern by private speculators, and the people have been called upon to pay this. "I owe the Gas Company," said Mr. B., "for three months supply of gas; they presented me with a bill of $110. I offered them in greenbacks the amount due at the rate of $2 per 1,000 feet; they refused to take it. I then asked them to institute a friendly suit against me to test the question. This they refused. I refused to pay the bill, and told them I should get out an injunction to restrain them from cutting my gas off. But they were a little too quick for me; in half an hour a man was at my house, and turned off the gas. [Laughter.] I then had, according to their computation—for I don't acknowledge that I owe them that amount—$110. With this I purchased a barrel of kerosene oil and twelve lamps. [Laughter.] I have enough to last me till next summer, and if any person will call at my residence I will show them that I have a better lighted house at the rate of $3 per month than when I was paying those enormous bills." We were not merely to protect ourselves, but to protect the community. A few dollars more or less is no object to me or my friend Chittenden, but it is the wife of the absent soldier who has to sit up all night and sew, to earn the food for her children, and the great mass of the people, that suffer from this exaction, not the gentlemen sitting on the platform. I wish they would sue me for that bill. I have dared them to do it. I dare them now. The Citizens' Gas-Light Company dare not sue William B. Barber for his gas bill.

WAR ON THE OLD COMPANY.

I went, said Mr. Barber, to the office of the old company, and told them I wanted gas; their mains were in the street, and I wanted them to supply me. They said they could not do it. Very well, said I, I shall give you ten days; on the eleventh day I shall sue for the penalty, which is five dollars per day for every day the gas is not furnished after ten days' notice has been given. And that is not all. We will soon have the old company served with such a number of notices that the penalty will figure up in the neighborhood of a million dollars a week. This is not mere talk. The old gas company is bound by its charter to furnish a supply of gas to citizens wherever their mains are laid, within ten days after notice is given; for every day after that they are subject to a fine of five dollars. Now we are having notices printed, and will soon serve five thousand of them upon the old company; these figure up the penalty five times five thousand dollars per day. [Applause.] As to the Citizens' Company, it has forfeited its charter by violating its chief condition that they should not assign any of the privileges granted them, and it would not require much trouble to wind the concern up. In regard to this Mutual Company, he believed that the stockholders should be paid seven per cent., and all over that amount to be applied to the works and cheapening the price of the gas.

The resolutions for the protective union were again read and adopted.

Mr. Barber again arose, and stated that it required one to put this movement through, and carry on the litigation against the gas company; he therefore proposed that a subscription be taken up. He moved that they raise one thousand dollars, and he would be one of fifty to give $20.

This last proposition was not approved, but a collection was taken up, and quite a pile of greenbacks contributed. The amount was not stated.

Mr. Center then made a few remarks to the effect that both the gas companies had violated their charters.

A motion was then made to adjourn, and that gentlemen present be invited to step up and sign the roll of the "Protective Union," also pledging themselves to call on the old company to supply them with gas, and prosecute them for the penalty. This was carried, and a large proportion of the audience enrolled themselves. The assemblage then gradually dispersed.

DYES OBTAINED FROM COAL-TAR.

The colors derived from coal-tar have now become important manufactures. But so far as we have been able to ascertain upon inquiry, all those used hitherto in our country have been imported. From an advertisement dated Huddersfield, England, (and published in the last number of the *Scientific American*), in relation to the manufacture of such dyes, we conclude that they have come into general use in Europe, and that they will be employed permanently in the arts, unless superseded by some more brilliant and less costly products. In view of these considerations we would direct the attention of practical chemists to these subjects, believing that the manufacture of such dyes would form a new and profitable branch of national industry. A brief description of the manufacture of such colors will, therefore, be of general interest.

One of the products of distilled coal-tar is naphtha, from which another product, called benzole, is obtained by distillation. Benzole is regarded as the hydride of phenyl, an organic radical. It combines with nitric acid (aquafortis) and forms nitrate of benzole, which has a fragrant odor. From this product, aniline—the base of the colors—is manufactured. There are several modes of manufacturing aniline, the object being to make hydrogen at the moment of its liberation—nascent state—unite with the nitrate of benzole. One mode is with the sulphide of ammonium. This consists in saturating an alcoholic solution of nitro-benzole, first with ammoniacal gas, and afterward with sulphuretted hydrogen. The liquor is now allowed to remain for twenty-four hours and then heated, when some sulphur will be found to have separated. On decanting from these crystals, the liquor must again be treated with sulphuretted hydrogen, and again distilled or heated. This process must be continued, if need be, re-saturating with the gas until a heavy oily matter deposits; this is the aniline, which requires to be separated from the accompanying fluid and distilled by itself. When so treated, it is obtained nearly pure.

Another and simpler mode, called Beschamp's process, consists in using acetic acid and iron filings, as follows: One part of nitro-benzole, one part of concentrated acetic acid, and two parts by weight of iron filings (or zinc) are mixed cold in a capacious retort. After a few minutes vapors begin to arise, consisting of aniline, acetate of aniline, and some unaltered nitro-benzole. These are condensed and distilled twice in a retort, when the aniline separates as an oily-looking substance, consisting of C_{12} H N. When pure it is colorless, has an aromatic odor, and is soluble in alcohol and ether. It is very volatile, nevertheless its boiling point is 360° Fah. It is a powerful base, and combines with acids to form salts, which are in general soluble; and thus the beautiful dyes—mauve, magenta, fuschine, azeleine, &c., are now manufactured.

Mauve—a purple—is prepared as follows: A cold solution of aniline in sulphuric acid is mixed with a cold solution of the bichromate of potash, and stirred. A black precipitate gradually falls to the bottom of the vessel in which the mixture is made, which gives the coloring matter in an impure state. This is collected, washed, dried, and then digested in naphtha, which dissolves some tarry matter in the product. The residue, which is insoluble in naphtha, is dissolved in alcohol, then distilled, when the spirit is driven off, and the remainder is pure mauve. The way to dye a purple or lilac with this substance is as follows: The crystals of mauve are dissolved in alcohol, and to the quantity intended for the dye a boiling hot solution of tartaric or oxalic acid is added; the mixture is then cooled, the article to be dyed is immersed and handled until the desired depth of color is obtained. These products dye woolen and silk goods, without mordants. To vary the shade of this color, a small quantity of hydrochloric acid gives it a deep violet tint, and a still larger quantity of the acid forms a blue color.

There is a very rapid way by means of which the production of this blue dye can be shown: Take a solution of aniline in hydrochloric acid, containing excess of acid; to this add solution of chloride of sodium, when the color will be formed immediately; when the desired tint has been obtained, pour in solution of carbonate of potash, which will neutralize the free acid and precipitate the mauve. If the alkaline carbonate were not added, the consequence would be that free chlorine would be disengaged and the color bleached.

The color *fuschine* is very beautiful, and is prepared as follows: Dry aniline is raised to its boiling point; when in this state, powdered chloride of mercury (corrosive sublimate) is added in small portions at a time, the liquid first becomes brown, but very soon a rich violet-red color appears: this is the dye. Water is now added, and the whole heated to ebullition. It is then allowed to rest a moment for some insoluble matters to subside, and filtered while hot. The filtered liquor contains the coloring matter dissolved. To separate it, advantage is taken of its being insoluble in a saline solution; accordingly, chloride of sodium in a solid state is added to the liquor, and as the salt dissolves, the dye is precipitated. Fuschine may be employed for dyeing, either in the aqueous solution without a mordant, or with the ordinary saline or acid mordants. With the exception of the mineral acids, which alter the color, magenta and fuschine are identical substances, under different names.

Azeleine is a splendid red color, and is difficult to make. It is prepared as follows: Ten parts of aniline are heated on a water bath up to 260° Fah.; when this temperature is reached, seven parts of nitrate of mercury, dry and in powder, are dropped in by degrees. It must remain at 260° for eight or nine hours, when the mass will be found to have changed to a beautiful red color. This only requires to be dissolved in alcohol and water, and used for dyeing.

When ribbons have been dyed with these and other colors, a beautiful gloss is imparted to them by the application of albumen in the form of white of egg. Recently these purple and red dyes have been used as inks, but they are not so permanent as those obtained from carmine. In dyeing wool with these colors, the temperature of the bath should not exceed 160° Fah., and the liquid should be a dilute aqueous solution of the coloring matter. A very small quantity of acid may be added as an "alterant," but if not required to produce certain shades, it should not be used. Azuline blue is more difficult to manage in dyeing silk, but it is a more beautiful color than that derived from indigo and the ferro-cyanide of iron—called "Prussian blue.' Hitherto, red, purple, blue, and lilac colors only have been more commonly produced from these coal-tar products; but from the efforts now being made in Europe by practical chemists to obtain other colors we doubt not but greens, drabs, and all shades of brown, will yet be dyed with them, as they seem to be effecting a complete revolution in the art of dyeing.—*Scientific American.*

DISSOCIATION OF GASES AND VAPORS.—When hydrogen gas is conducted through a tube made of some porous material, provided the tube be of sufficient length, no hydrogen gas will escape from the end, but the gas which is collected over water will be pure atmospheric air; the latter must, therefore, have entered the tube in the same ratio in which the hydrogen was escaping through the pores. When the same tube is enclosed in a wider tube, which is glazed over and therefore not porous, and hydrogen gas be passed through it, while through the onter tube a current of carbonic acid is passing, the same phenomenon will take place; from the porous tube carbonic acid will be obtained, from the glazed one hydrogen gas. These results are attributable to the dialysing action of gases. St. Claire Deville, besides the above, has observed that, under certain circumstances, at a high temperature, but much below that necessary for the decomposition of the vapors which were subjected to the experiment, they may be split into their constituents or *dissociated*. Thus, in using the double tube, brought to a bright heat, on passing steam instead of hydrogen through the porous tube, and carbonic acid through the outer one, hydrogen will be found to come from the inner tube, and the vapor from the outside tube is a mixture of carbonic acid and oxygen.

THE AMERICAN GAS-LIGHT JOURNAL is published on the 1st and 15th of every month, and is the recognized official organ of

LIGHT, HEAT, WATER-SUPPLY AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of LIGHT, and promote thereby the interests of companies and consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, HEATING, and DRAINAGE everywhere.

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C. ELTON BUCK,

ROOMS of the AMERICAN GAS-LIGHT JOURNAL,

No. 39 Nassau st., cor. of Liberty st., opposite the Post-Office.

New York City

AGENTS OF THE AMERICAN GAS-LIGHT JOURNAL

FOREIGN.

Germany .....B. WESTERMAN & Co., of New York.

Great Britain....TRUBNER & Co., 60 Paternoster Row, London, where single copies may always be found,

Paris, France. ..} LE JOURNAL DE L'ECLAIRAGE AU GAZ, 25 Boulevard Poissonnière.

DOMESTIC.

V. HAROLD MYERS, No. 152 South Fourth st., Philadelphia.

The AMERICAN GAS-LIGHT JOURNAL can be purchased of all the newspaper and periodical dealers in the U. States and Canadas.

THE

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 1ST AND 15TH OF EVERY MONTH.

C. ELTON BUCK, ... EDITOR.

MONDAY, FEBRUARY 1, 1864.

The gas companies of this State are receiving the share of attention from the Legislature which that august body annually deigns to bestow. Notices of a number of bills to curb the powers of these companies have been issued, and it is hinted that others will soon be brought before the Senate and the Assembly, all of them designed to pander to the prejudices of the public, and to hamper still further the actions of companies, and to restrict their privileges. As we have mentioned in another column, Mr. FIELDS, of the Senate, introduced a bill, which was passed, to amend the act for the protection of gas consumers, the object of which is to cause the companies to pay the salary of the Inspector of Gas-Meters, the amount to be proportioned among them according to their paid up capital. The amount which the companies will be called upon to pay is a mere bagatelle, and, divided up, as it is, among such a number of companies, it will not be a very difficult burden for any of them to bear their proportion.

Mr. PINCKNEY, of the Assembly, has offered what the papers reported as a "petition for the relief of gas consumers," but which, on examination, proves to be nothing more than a covert attack upon the Metropolitan Gas-Light Company of this city. Through the courtesy of Mr. PINCKNEY we have been favored with a copy of this petition, which we subjoin:

"*To the Honorable the Legistature of the State of New York:*

"Your memorialists would respectfully represent that they are residents of the district in the city of New York which is supplied by the Metropolitan Gas Company, and consumers of gas manufactured by said company; that the charter of said company was granted by the Legislature of New York, under the representations that the gas furnished by the said Metropolitan Gas Company 'was to be of the best quality, and at rates equal to, if not lower, than the remaining companies in said city;' that said company was granted a charter, and that, since the commencement of their work, said company has not only furnished gas at a higher rate than the former companies, but of inferior quality.

"Your petitioners would further represent, that it was generally expressed by said company, or the petitioners for said charter, that gas was to be furnished by them at a low rate, in opposition to other companies and to break down monopolies; that, since said charter was granted, said company have purchased, or are in the use of, the mains and branches of the 'Manhattan Gas Company,' lying between Thirty-fourth and Seventy-ninth streets and the East and North Rivers, and that, by such action, your petitioners are compelled to purchase gas of an inferior quality at a high rate. Having no redress therefrom except to petition your honorable body to repeal such grant, your petitioners would therefore respectfully petition the Honorable the Senate and Assembly of the State of New York to consider this their appeal and grant them the relief. And your petitioners will ever pray, &c."

The absurdity of this document ought to be patent to every candid reader. In the first place, its assertions are false. The price charged by the Metropolitan Gas-Light Company is precisely that charged by the Manhattan and New York Companies—no more, no less. We speak of this from personal knowlege, as we consume the gas of this company, and our bills are charged at the uniform rate of 25 cents per hundred cubic feet, which price rules throughout the city. In regard to the quality of the gas, the statement set forth in the petition is equally untrue. Its illuminating power is excellent, and it may be doubted whether better gas is made in the country. So much for the principal statements, which, were they founded in fact, might afford some pretext for legislative interference, but which, being wholly untrue, are not worthy of further notice.

Another remarkable assertion is made in this petition—that because the Metropolitan Gas Company have purchased the mains which the Manhattan Company had laid in their district prior to the arrangement concluded between the two corporations, the "petitioners are compelled to purchase gas of an inferior quality." Here is a most wonderful discovery—one worthy of extended inquiry; and it would be well to ascertain why the gas of the Metropolitan Company is rendered so "inferior" because it is distributed through these mains. We trust that the importance of this subject will be appreciated at Albany, and that it may be referred to a committee with full power to investigate the matter; and we venture to suggest that other important questions still remain unsettled, which might be determined at the same time, such as "whether the moon is made of green cheese," and as to the origin of milk in the cocoa-nut, &c., &c. Failing to obtain satisfactory answers to these queries, it might be well to apply to the proper authorities for an order for a writ *de lunatico inquirendo*, to determine the mental condition of the Solon who indited the "petition for the relief of gas consumers."

Another bill relative to the gas interests of this city has been introduced into the Assembly. It is entitled, "An Act to Authorize the Common Council to Supply the City with Gas." We have not yet seen a copy of this document, but enough evidence may be gleaned from its title to show that the City Fathers desire additional plunder in the shape of the patronage which would flow from the inception of any such measure. Is this another attempt to levy black-mail upon the existing companies? The gentlemen composing the "third house" at Albany are expert phlebotomists, and they sometimes ply their vocation to such extremes as to drain nearly the last drop of blood from their unwilling patients. Whether this is but a repetition of the many attempts to work upon the credulity of the officers of our gas companies, or whether it is a genteel attempt to plunder, remains to be seen; for up to the time of writing this, no action has been taken by the Legislature.

Mr. FOLGER, of the Senate, has introduced a bill to authorize gas companies to lay their mains in turnpike roads. We hope to be able to give a sketch of this in our next number. It has been but recently introduced, and we have not yet seen a copy of it.

From these remarks it will be evident that gas companies occupy a very important position in the eyes of the law-makers assembled at the State Capitol. That so many bills should have been offered so early in the season is suggestive that others may be yet presented. It will be well for the managers of companies to keep a sharp look-out on the proceedings of the Legislature, for there may be some important bills presented, affecting their interests in no small degree.

SUPPLY OF PUBLIC LAMPS BY METER—AVERAGE METER INDICATIONS.

We have been favored with a letter from SAMUEL HUGHES, Esq., on the subject of average meter indications for the supply of gas to public lamps, in which some reference is made to our remarks on page 168 of this volume. At the time the article in question was written, we had not seen the paper alluded to by Mr. HUGHES, as the number of the *Sanitary Reporter* in which it was contained was published in London but a short time before the December 1st number of this JOURNAL went to press, and the time occupied in the transmission of the mails across the Atlantic rendered it impossible to obtain the description of Mr. HUGHES' device for regulating the pressure of public lamps at an earlier moment. As it may now prove interesting to our readers, we have had cuts made of the apparatus, and these, with the descriptive article from our valued contemporary will be found in another part of this issue of the JOURNAL. If the arrangement here suggested answers the purpose for which it was proposed, and we have Mr. HUGHES' testimony that it does, then the only serious objection to average meter indications, viz., that of friction of the gas in passing though the metered burner, is removed. This is a point of great moment. If accurate determinations of the amount of gas burned in public lamps can be obtained, with so small a proportion of meters as those used in the English towns named in the article quoted, then a great advance in the progress of gas lighting will have been made, and the supply of public lamps, instead of being a source of constant complaint and dispute, as it is at present, will become as certain and exact as the supply of gas to private consumers. If one meter will afford an indication of the average amount of gas consumed by a dozen or more public lamps with accuracy, a great end will be accomplished, which will lend no small influence to a more perfect understanding between producers and consumers of gas.

Many of the leading gas experts of England are decidedly in favor of a total reform in supplying gas to street lamps. This reform consists simply in selling gas to the public authorities by meter. We have frequently expressed our conviction of the equity of this proposal, and it is gratifying to know that the subject is receiving a large share of attention in different places outside of Great Britain. If the apparatus proposed by Mr. HUGHES be found to answer perfectly, gas engineers and town authorities will be much indebted to him for having solved a knotty problem, and led in the advance of a true and much-needed reform.

THE BROOKLYN GAS WAR.

In another column will be found a report of the proceedings of a meeting of the gas consumers of South Brooklyn, held on Wednesday evening last, which we take from one of the local papers. It will be seen that the time which has elapsed since the former meeting, held more than a month previously to this one, has not cooled the wrath of the consumers at their fancied wrongs, nor served to modify the acrimony of their feelings. Whatever may be thought of the course of the Citizens' Gas Company in their dealings with their consumers, it is evident that they have placed themselves in a position of much embarrassment, and one from which it will take great care to extricate them from the indignation of the people. Popular assemblages are apt to be intemperate in their actions, and from a perusal of some of the remarks made at the Brooklyn meeting, it will be seen that this gathering was no exception to the general rule, and the customary

extravagance of expression was indulged in, and in the heat of the excitement some hard names were called.

There is one thing which should be remembered by these indignant gas consumers. When the Citizens' Company agreed to furnish gas for $2 50 per thousand, prices of all the materials used in their works were sufficently low to justify this agreement As the directors of that company are but mortals, and not endowed with the gift of prophecy, they could not at that time have anticipated the enormous advance in the rates for these materials, nor the enhanced prices of labor. Although their promise may have been made in good faith, which it undoubtedly was, the difference between the figures ruling then and now should be taken into consideration, and it is but fair to remember that circumstances alter cases. In venturing this suggestion we do not assume the championship of the companies, nor act as their apologists for any real wrongs they may have visited upon their consumers. But in all fairness, before resorting to charges such as were made at the meeting, and before uttering such expressions as "swindle," &c., these circumstances should receive due consideration.

Whether either the Brooklyn or the Citizens' companies have violated their charters by entering into the arrangement for districting, remains to be decided by the proper authorities. It is hardly to be supposed that the two companies would have entered into the arrangement concluded between them without first consulting counsel as to the legality of the step. As the "injured consumers" have resolved to test this right, we shall probably have some developements which may be important to other companies. If the consumers of South Brooklyn hold the rod over the Brooklyn company, which they claim they do, it may be in their power to cost the corporation a vast deal of expense and trouble.

Of the proposed mutual gas company which it is threatened to organize, we have no very favorable opinion. If the consumers choose to to risk their money in establishing such an organization, and will be content to manage it for the sole purpose of complying with the whims of the people, they will find their path beset with thorns, and will experience the same opposition which, to a certain extent, seems to be the lot of all gas companies. There will be the same complaint about bills; the same murmuring about unreliable meters, bad gas, poor light, &c., with which officers of existing gas companies are now regaled, and we venture to predict that no practical good will come of the plan.

Levy's Wood Gas.—We call attention to the advertisement of Levy's Patent Wood Gas, which will be found in its appropriate place. Mr. Levy has lately built gas-works at New Rochelle, in this State, where his process has been fully tried on a working scale, and pronounced decidedly successful. In many parts of the country wood may now be procured cheaper than coal, and many companies formerly making coal gas now carbonize wood. We have heard Mr. Levy's process highly spoken of by those who have seen it in operation, and we know that the gas he makes gives great satisfaction in New Rochelle.

Explosion in a Coal Mine.—On Thursday last, an explosion, caused by the ignition of gas, occurred in Raccoon Pit, near Clover Hill, worked by the Chesterfield Coal and Iron Mining Company, resulting in the death, by wounds and suffocation, of sixteen workmen, a number of others being also wounded, three fatally. Mr. Bertram, the overseer, was killed. All the bodies were recovered. The explosion was succeeded by a sheet of flame ascending several hundred feet above the mouth of the pit. The damage done to the pit must have been serious. Operations will doubtless be again commenced without delay. Has Sir H. Davy's celebrated safety lamp fallen into disuse in our pits? Where used in England explosions are of rare occurrence.—*Richmond Sentinel, Dec. 17.*

CORRESPONDENCE.

SUPPLY OF PUBLIC LAMPS BY METER.

14 Park Steet, Westminster, S. W.,
London, Dec. 23, 1863.

To the Editor of the American Gas-Light Journal:

I am glad to perceive that the application of meters to public lamps is attracting the attention of your able and useful journal, and that you have been discussing the question of average meter indication as a means of arriving accurately, by the aid of a small proportion of meters, at the quantity of gas consumed by a much larger number of lamps to which no meters are attached.

I refer more particularly to the article in the American Gas-Light Journal of 1st December, in which you do me the honor to mention my name as largely connected with the introduction of meters for public lamps in this country, and as an advocate for average meter indication as applied to public lamps. There is one observation of yours, however, to which I would take exception, namely, where you refer to the friction of gas passing through meters, and suggest that this would affect the registration of the meters, so as to lead to the conclusion that a smaller quantity had been consumed in the lamps with meters attached than in the unmetered lamps or those without meters.

I admit at once, if this element of friction really existed in the metered lamps, and were absent in the unmetered, it would be a fatal objection to the system of average meter indication. In fact, I have found, myself, from numerous observations, that the friction of a meter such as used for street lamps will frequently reduce the pressure of gas at the burner to such an extent as to produce a difference of consumption between itself and a burner with no meter interposed, equal to 10 or 12 per cent.

This objection was early foreseen, and has been completely guarded against in every town where I have erected meters or recommended their use. One essential element of success in the average meter system is this: that, in addition to the lamp-lighter's tap by which he turns the gas full on or full off, there should be an independent mode of adjusting quantity (in other words, pressure), so as to make every lamp burn alike, whether metered or unmetered. With this view, I have introduced the double regulating tap described and figured in the *Sanitary Reporter* of 6th November, 1863.

Writing on this side of the Atlantic, I am under the disadvantage of not knowing whether you have already quoted from the *Sanitary Reporter* of this date, but if you have not done so, allow me to say that the article referred to gives a complete description of the process which I have adopted for securing uniformity of consumption, at Reading and other places, between all the lamps, whether metered or unmetered.

I think, Mr. Editor, when you shall have read this description, and referred to my specification for adjusting the taps of public lamps where meters are used (see p. 224), that you will admit your objection to the friction in the metered lamps is completely answered and overcome. At the same time, I am free to admit, as before explained, that without the double tap, or some similar arrangement, there would be great force in your objection.

Congratulating you, Mr. Editor, on the spirit and energy which you display in promoting the progress of gas-lighting, and advocating its interests in America, and assuring you of the hearty manner in which your efforts are appreciated in this country,

I remain, sir, your very obedient servant,

Samuel Hughes.

Gas in Brazil.—The Gas Company of Bahia, Brazil, is reported to be in a flourishing condition. The number of public lamps is 1,761. The number of private lamps, 800, with 80 meters fixed.

Gas in Egypt.—The building of the new gas-works for lighting the town of Alexandria, is making progress. It is anticipated that in about six months the streets of the city will be lighted with gas.

Quality of Edinburgh Gas.—During the period from November 3d to the 13th of the same month, the illuminating power of the gas made by the Edinburgh Gas-Light Company, averaged 30.93 standard candlas.

REPORTS OF GAS-LIGHT COMPANIES.

LOUISVILLE, KY.

Office Louisville Gas Company,
January 12th, 1864.

To the Stockholders of the Louisville Gas Company:

Gentlemen,—At the close of the last year the cost of the gas-works and real estate had exceeded the capital stock of the company $53,754. An attempt was made the 19th January, 1860, to increase the capital $48,140, by selling to the city of Louisville $20,000, and to the individual stockholders $28,140 of stock at par. This was in ratio to the stock held by each. As there existed a surplus that had collected from year to year, due to the stockholders, and partly invested in the extension of the works, it was thought best to issue stock in this manner. The city procured an injunction from the Chancery Court, which prevented the issue of the stock at par; the case was taken by the city to the Court of Appeals, more than three years ago, where it still remains undecided. It is now of no interest to the city or the gas company how this suit may finally be settled; yet, by this action of the city, the gas company have been cramped for means to make extensions, and the extensions of street mains through new streets have been limited. On the 12th of December last the directors determined to increase the capital to the full amount authorized by the charter, $600,000, by first making an extra dividend of the surplus profit, after reserving $70,000, which remains to the credit of contingent fund, and selling at public auction 2,372 shares of stock, par value $118,600, the premium on the sale of this stock to be added to this contingent fund. The new stock was sold on the 11th inst., at the average price of $77 03 per share, which, after deducting commission, taxes, and advertising, left a premium on the sale of the stock of $63,196 51, and this sum is added to the contingent fund, making the account $133,196 51; the city purchased of new stock 880 shares, which makes her stock now 4,985 shares, par value $249,250; individuals purchased 1,492 shares, which makes the stock held by them 7,015 shares, $350,750; 12,000 shares, $600,000.

We have purchased the past year 123 dry meters for $1,283 40, and charged to profit and loss $455 for 50 meters worn out and destroyed. 67,877,900 cubic feet of gas have been made this past year, being 7,291,650 more than was made the year previous. The whole quantity of gas made by the works in twenty-five years is 708,402,240 cubic feet.

Owing to the great increase in the price of labor and all material used in the production of gas, on the 1st November, 1863, the price of gas was increased 20 cents per 1,000 cubic feet, making the price $2 70 net per 1,000 cubic feet.

The northern section, six ovens, in retort house No. 1, has been taken down the past year, and rebuilt and reset with five retorts to an oven; three of these ovens are at work, and are found to heat and carbonize in a satisfactory manner. Some of the Belgian clay retorts, which have been constantly at work for three and a half years, will have to be taken out to rebuild the furnaces which are burnt out. Our experience proves the clay retorts to be, in every respect, superior to the iron retorts formerly used by the company. The past year 1,203 applications for gas have been made; 1,205 meters have been placed; 1,043 meters have been displaced; we have now 3,750 consumers—162 more than last year; 137 new services have been placed (the whole number is 3,954); 11 street lamps have been placed; there are now 1,229 street lamps in use; 1,936 feet two-inch pipe, and 2,784 feet of four-inch pipe, have been laid. The whole extent of street mains is 45 miles and 4,411 feet.

Referring you to to the cashier's detailed report,

I remain, yours very respectfully,

Robt. G. Courtenay, Pres't.

PRODUCT, RECEIPTS AND EXPENDITURES,

In the Manufacture and Sale of Gas by the Louisville Gas Company, from the 31st December, 1862, to the 31st December, 1863.

	Cubic feet.
Gas sold by meter.....	48,787,400
Gas consumed by street lamps, and loss by leakage and condensation	19,090,500
Total product.....	67,877,900

RECEIPTS.

Gas sold by meter and street lamps		$151,538 51
Sales of coke		9,928 05
Sales of coal tar		1,332 28
Meter rent		1,184 00
		$163,977 84

EXPENDITURES.

Coal carbonized, and used in offices and shops, 17,180,058 pounds	$52,530 70	
Lime used in purifiers, 4,689 bushels	1,442 70	
Cleaning and lighting street lamps, and repairing	5,681 05	
Workmen's wages	18,590 95	
United States Excise Tax	5,471 74	
Repairs on gas-works, mains and meters	7,462 39	
Office expenses	6,566 32	
City and State taxes	1,802 12	
Meter fluid	131 00	$99,678 97
Net product for the year		$64,298 87

Street Mains laid to the 31st Dec., 1863.

2-inch.	3-inch.	4-inch.	6-inch.	10-inch.	12-inch.
66,885 ft.	35,525 ft.	124,644 ft.	2,950 ft.	8,521 ft.	3,536 ft.

Total, 242,011 feet.

Additions to Gas-Works in 1863.

Gas-works proper	$113 15	
Street mains	1,193 58	
Services	1,247 05	
Street lamps	159 39	
Meters	820 71	
		$3,533 88

PROFIT AND LOSS ACCOUNT.

1863.			
January.	By balance from old account		$76,873 96
July.	" gas bills		36 03
	" rent		167 78
	" gas 6 months		44,525 01
	" meter rent, 6 months		335 75
	" coke, 6 "		3,597 68
	" coal tar, 6 "		572 23
	" 6 months interest on $77,000 city bonds		2,310 00

CONTRA.

1863. July.	To unpaid gas bills	$1,301 58	
	" worn out meters	455 00	
	" gas bills	8 66	
	" expense 6 months	2,846 49	
	" repairs on gas-works 6 m'ths	3,264 25	
	" gas-fittings 6 months	44 46	
	" dividend 6 per cent. on $481,400	28,884 00	
	" balance to new account	91,614 00	
		$128,418 44	$128,418 44
1863. July.	By balance as above		$91,614 00
December.	" gas bills		10 26
	" profit on sale of Louisville and Frankford Railroad stock		22 01
	" rent 6 months		114 00
	" 6 months interest on $77,000 City Bonds		2,310 00
	" gas, 6 months		21,356 22
	" coke, do		6,380 37
	" coal tar, do		760 05
	" meter rent, do		848 25

CONTRA.

1863. December.	To unpaid gas-fitting bills	$351 27	
	" " coke bills	76 96	
	" gas bills	128 88	
	" unpaid gas bills	299 63	
	" loss on sale of Louisville Nashville Railroad stock	250 04	
	" expense 6 months	8,719 83	
	" repairs on Gas-Works 6 m't's	4,198 14	
	" gas-fittings	244 66	
1864. January.	" dividend 6 per cent. on $481,400	28,884 00	
	" extra dividend No. 3 of a surplus gained in a series of years	85,111 52	
	" balance to new account	2 23	
		$123,367 16	$123,367 16
	By balance		2 23

BALANCE-SHEET OF THE LOUISVILLE GAS COMPANY.

CREDITS.

Capital stock:		
Individuals, 5,628 shares, at $50	$276,150 00	
City of Louisville, 4,105 shares, at $50	205,250 00	
		$481,400 00
Contingent fund from profits		70,000 00
Due Thomas Glover, London, for meters		728 57
Unpaid dividends:		
Nos. 41 to 48	$240 00	
Dividend No. 49	28,884 00	
Extra dividend No. 3 of a surplus gained in a series of years	85,111 52	
		114,235 52
Profit and loss		2 23
City of Louisville trust fund invested		93,976 88
United States excise tax for December, 1863		682 46
Lamplighters, to their credit		110 00
		$761,085 66

DEBITS.

Six-per-Cent. Bonds paid by city of Louisville, her original subscription to Gas Company			$77,000 00
Cash on hand			17,574 83
Invested in Louisville Gas-Works:			
Gas Works proper	$202,851 80		
Street mains	183,677 72		
Services	30 545 06		
Street lamps	31,276 66		
Meters	37,186 73		
Real estate:			
Original site for Gas-Works	$18,801 09		
For extension of Gas-Works, 210 feet front on Washington street, extending to Beargrass creek, and 105 feet front on Franklin street, to same creek	14,320 55		
Office and shops on Green street, with 65 feet front on Green street	16,544 89		
		49,666 03	
			535,154 00
Gas-fittings, including wagons, horses, and mules, &c.			2,759 40
Gas-fitting bills unpaid		$64 65	
Coke bills unpaid		807 30	
			871 95
Unpaid gas bills due by city of Louisville		$7,683 50	
United States, for hospitals, &c.		1,257 90	
Individuals		14,059 07	
			$23,000 47
Coal on hand			9,123 77
Lime on hand			195 65
Belgian clay retorts (new) on hand			652 18
City of Louisville trust funds, bonds, and other securities held for her			94,735 29
Gas bills, small balances			18 12
			$761,085 66

Louisville, Kentucky, January 4th, 1864.

JOHN S. CAIN, Cashier.

DIRECTORS FOR 1864.

ROBT. G. COURTENAY, President.

Six Directors on the part of the Stockholders.
- DR. R. C. HEWITT,
- JAS. W. HENNING,
- GEO. W. MERIWETHER,
- T. T. SHREVE,
- A. VATTLE,

Three Directors on the part of the City of Louisville.
- E. BUSTARD,
- DR. LEWIS ROGERS,
- PAUL DUNELLI,

SUPPLY OF PUBLIC LAMPS BY METER.

(*From the Sanitary Reporter.*)

In recent inquiries which we have made on this subject, we find that where meters have been adopted for public lamps the consumption has varied from 2½ feet to 4½ feet per hour. Where the consumption has been below 3 feet the system is highly praised, and of course great economy has been produced by the use of the meters. When the consumption has been 4 or 4½ feet, however, the experiment may be said to have failed so far as economy of consumption is concerned, although even when the lamps burn by meter as much as was charged under the old contracts for 5 feet an hour, there are still great advantages and considerable economy of another kind, from the lighting and extinguishing being in the hands of the local authorities, so that the period of burning can be accurately adjusted to the requirements of place and season.

By admitting for a moment that where the consumption by meter has been more than 4 feet an hour, the system has failed to realize that saving of consumption which was anticipated, let us inquire calmly and dispassionately how this has arisen, and why the results in some towns have been so entirely different from those which are obtained, for example, in Reading and Worthing.

We find, then, as a general rule, that in all those towns where the meter consumption has exceeded 4 feet an hour, and of course in the one or two exceptional places, such as Stirling, where the meter system has been pronounced a failure, that no means whatever have been taken to insure uniformity of consumption between the metered and the unmetered lamps. When we write to one of these towns to inquire what means have been taken to insure this uniformity of consumption, a very common answer is, that 3 feet or 4 feet, or 4½ feet burners, have been applied to all the lamps, but a complaint is generally added, that either the metered or the unmetered lamps consume a much larger quantity than the others, notwithstanding the perfect uniformity of the burners. We should like to know how it could be otherwise, when no means whatever are taken to make burners of the same capacity burn at the same pressure. It seems almost like teaching the alphabet at the present day to assert that the capacity of a burner is in no way defined by describing it as a 2-feet or 3-feet, or any other number of feet, burner. The quantity it consumes must have reference to the pressure between the tap and the burner, and unless this is defined at the same time, the mere mention of so many feet has no meaning whatever. The smallest burner can be made, with a high pressure, to consume as much as the largest, and, *vice versa*, the largest burner with a low pressure may be made to consume as small a quantity as the smallest burner.

The fact being, then, that no means are practically taken in certain towns to insure anything like uniformity between the metered and unmetered lamps, we have no longer any reason to be surprised because the system works unsatisfactorily. Whether the servants of the local authority or those of the gas company light the lamps, the same complaints are certain to be made. In the former case it is said the taps of the unmetered lamps are more fully turned on than those of the metered, and in the latter case the complaint is of the same nature, but exactly reversed, namely, that the metered lamps have their taps more fully turned on than the unmetered. Besides the complaints which inevitably arise in this way, it will be found impossible, even if the lamplighters are ever so honestly disposed, to do absolute justice to both parties by producing in all the lamps any thing like a uniform consumption.

The only remedy for this evil is to adopt the double regulating tap introduced by Mr. Hughes, at Reading, or an equivalent contrivance. The essential difference between this and the old method is, that one tap is beyond the control of the lamplighter, and is adjusted once for all by the officer of the local authority in concert with the manager or some other officer of the gas company. The other tap is for the use of the lamplighter, who is simply directed to turn it full on, or full off, according as he wishes to light or to extinguish. Provided the proper means be taken to adjust the regulating tap, and provided both the superior officers agree on this adjustment, there can be no more complaints as to irregularity of consumption as between the metered and unmetered lamps.

The principle of a double-regulating tap is not new, nor does Mr. Hughes claim any merit as an inventor in this matter. All that he has done is to combine the two taps in one casting, so that they can be attached in a moment to any existing lamp-posts.

The principle of the double tap is found in nearly every French town, only that the regulating part is near the base of the lamp post, and is simply set or adjusted by introducing a key. The lamplighter's tap is just under the burner, as in England, and the duty of the lamplighter is simply to turn it full on and full off, not to exercise any discretion in its adjustment, as in England.

Thus the continental system possesses a very considerable advantage over that which has prevailed in England ever since the introduction of gas-lighting, because there the supply of gas is really regulated by an intelligent and superior authority, the office of lamplighter being confined to the merely mechanical act of turning full on and full off. The system of double taps has also been in action for some years, both at Worthing and Leicester, but in both cases the regulating tap is fixed on the service pipe at some distance from the lamplighter's tap. The system has been perfectly satisfactory at Worthing, where the consumption has only been 2¾ feet an hour. At Leicester some attempts were made to arrive at the pressure which prevailed in various parts of the town, and the regulating tap was adjusted to give a consumption of 4½ feet an hour when the lamplighter's tap was turned full on.

In explanation of this large consumption, it must be observed that there are only 891 public lamps in Leicester, which is a town of nearly 70,000 inhabitants, so that the lamps must be an unusual distance apart. There are only 10 meters to the whole number of lamps, or in the proportion of one to 89, so that this is an extreme case of average meter indication. Add to this that the burners are, we presume, the common iron nibs, probably burning at far too high a pressure, and we have several reasons which considerably shake our confidence as to 4½ feet an hour being a necessary quantity for other towns.

Having now explained the introduction of the double

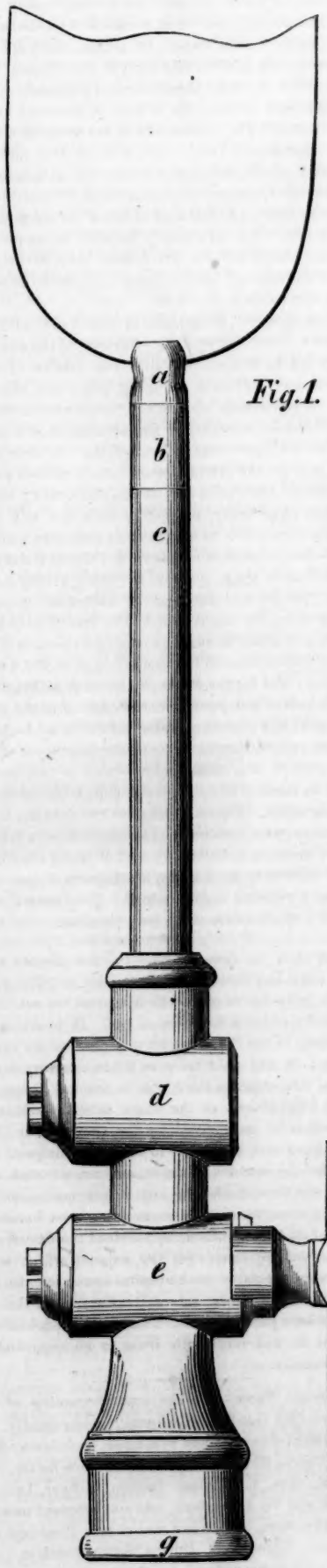

Fig.1.

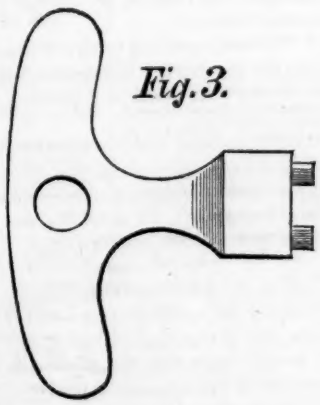

Fig.3.

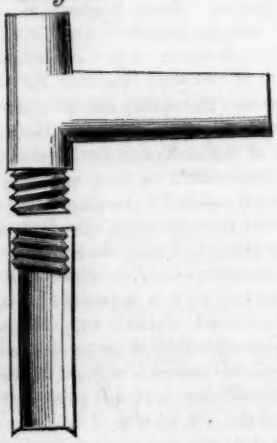

Fig.4

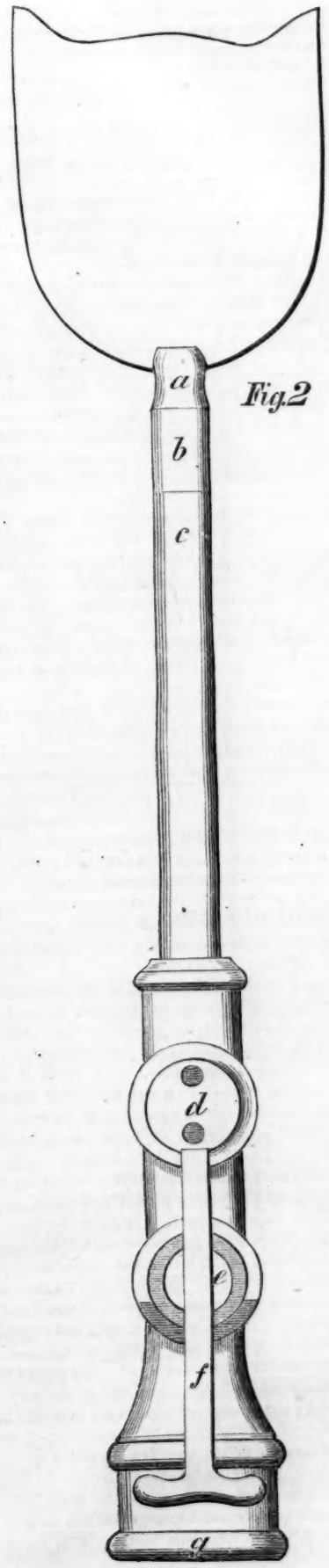

Fig.2

regulating tap, and the great advantages it possesses, we refer our readers to the annexed woodcuts, from which the following description will be readily understood:

Fig. 1 is a full-sized front elevation, and Fig. 2 a side elevation of the double-regulating brass tap.

(*a*) is the steatite (or so-called lava) burner, fixed in its iron case (*b*).

(*c*) is the socket into which the burner screws, and to which the T piece is affixed in the process of adjustment.

(*d*) is the regulating tap which is adjusted by means of the key shown in Fig. 3.

(*e*) is the lamplighter's tap, which is readily turned full on or full off by the lighting rod acting on the lever (*f*).

(*g*) is the socket of the double-regulating tap which fits on the screwed end of the service pipe.

Fig. 4. is the T piece used for adjusting the regulating tap, as hereafter described.

It is quite evident that the same purpose of intelligent control would be answered by having the regulating tap detached from the lamplighter's tap, as in the French towns, in which case it might be fixed on any part of the service pipe, and in the metered lamps might be fixed immediately below the meter. This may be left to the judgment and convenience of parties, but at Reading it was thought desirable and least expensive to have both taps in one casting, the cost of the double-regulating tap, cast complete, being about 1s. 8d. each.

DETERMINATION OF PRESSURE IN TOWNS WHERE METERS ARE TO BE INTRODUCED FOR PUBLIC LAMPS.

Before attempting to adjust the regulating taps above described, the pressure which prevails in the mains must have been accurately determined. This is best effected by the use of the self-registering pressure-gauge, or pressure indicator, which is described and illustrated by an engraving at page 241 of *Hughes's Treatise on Gas-Works*.

This instrument costs complete, with glass shade, about £9, and furnishes a complete record of the pressures which prevail throughout the whole 24 hours. The pressures are marked on graduated sheets of paper, which should be preserved as permanent records.

For a tolerably small town not exceeding 15,000 inhabitants, one registering pressure-gauge will be sufficient, provided it be judiciously fixed in a central part of the town, and at a proper average elevation. Large towns and places, where the works are very irregular, will require several pressure-gauges, and these should be kept at work several months before the meters are put into action.

Having thus obtained a record of the pressures actually prevailing in the mains of the gas company, the next step is to adjust the regulating taps. This requires a little judgment on the part of the officer entrusted by the local authorities.

For instance, at Reading it was found that the average day pressure was 10-tenths of an inch, and the average night pressure was 12-tenths during the hours in which the public lamps were burning. A simple experiment then showed that if the regulating taps were so adjusted as to give on a King's gauge, at the level of the foot pavement, a pressure between the lamplighter's tap, when turned full on, and the burner, a pressure equal to .12 inches, the lamps during the night should consume 2¼ feet an hour. To show how accurately this adjustment was made, it was found on the first reading of the meters that each had consumed 2.39 feet an hour, the difference between this and the 2¼ feet to which they were adjusted being caused by a diminished pressure in the mains of the company, as recorded by the pressure-gauges, which were still kept in action.

The following is the specification which has been prepared by Mr. Hughes in order to explain the simple mode of adjustment which should be made, and describing the best form of burner which can be used in order to give the maximum of light with the least consumption of gas:

*Specification for adjusting the Taps of the Public Lamps at * * * * **

1. The officer acting on the part of the corporation (or other local authority) will be provided with a T piece, a King's pressure-gauge, and a length of india-rubber tubing; also with a sufficient number of steatite, batswing or fishtail burners, each of which has been proved not to vary more than one-fifth of a foot from a consumption of 5 feet an hour, with a pressure at the burner of 4-tenths of an inch.

2. He will adopt the following mode of adjustment at each lamp:

(*a*) Affix a T piece in the socket immediately above the lamplighter's tap, and screw a burner into the socket of the T piece.

(*b*) Connect the T piece with the King's pressure-gauge by means of the india-rubber tube.

(*c*) Light the gas after turning it full on by means of the lamplighter's tap.

(*d*) Adjust the regulating tap so as to bring the pressure of the gas while burning exactly to —— inches on the King's pressure-gauge.

3. This pressure in the daytime being calculated to produce a consumption of —— feet an hour should be equal during the night to an average consumption of —— feet an hour.

4. The same operation being performed indifferently for all the lamps, both metered and unmetered, will give, as nearly as possible, a perfectly fair and equal flame to each.

It has been found that the adjustment as above described can be performed by each officer at the rate of 40 or 50 lamps per day; and as several can be simultaneously employed, the operation can be very soon effected for any town, however large.

PETROLEUM ITEMS.

THE LAST OF THE OIL-WELLS COMPANY OF CANADA.—To the several inquiries received by us during the past few months respecting the position of the Oill-Wells Company of Canada, and to the taunting inquisitiveness of some of our transatlantic contemporaries who print and publish in the interests of the oil trade, we have now a reply. The company, which made its appearance in November, 1862, with a nominal capital of £75,000, made a provisional purchase of 2,984 acres of oil-producing lands in Western Canada, sent one of themselves on a tour of observation through the oil regions, reported favorable progress to the shareholders, was congratulated by the *Daily News*, has collapsed, but not in the fashion adopted by the promoters of many similar unfortunate undertakings, as the following circular, issued by the directors, will show:

"The directors of the Oil-Wells Company of Canada, satisfied by the personal visit of one of their board, and by the reports of their special commissioners sent out from England to Canada, that it would not be for the interest of the shareholders to acquire possession of the oil-wells and lands (2,948 acres) in Western Canada, for the purchase of which at £25,000 they had provisionally contracted, and subsequently learning from their local agents that many of the most productive wells in oil-springs' districts had ceased yielding any supply except by the expensive process of pumping, have recommended, in a circular recently issued, the return to the shareholders the amount of subscribed capital without any deduction whatever, and the dissolution of the company. The deposits are now in course of repayment."

This, though clothed with honorable intentions, smacks considerably of the bombastic spirit which has distinguished the concern from the beginning. However, considering past and present circumstances, we applaud the step they have taken, but cannot be convinced that real necessity was the cause, or that the partial failure of the supply in Canada ought to have brought about the failure of such a vast commercial enterprise, with a large capital, an extensive field for enterprise, and extraordinary facilities for making fortunes for the shareholders. In fact, when the company issued their prospectus, the oil trade generally was in a very prosperous condition. It is true that early in 1863 some of the wells at Enniskillen ceased to flow spontaneously; but, supposing Canada had refused to yield another crop of oil, was there not room for the company's operations in Pennsylvania? and, if we remember rightly, the promoters pledged themselves to trade not only in Canada, but wherever there was a prospect of making profit. The falling off in the Canadian supply has been more than compensated for by increased production elsewhere, greater economy in storage and transportation, and improvement in the market value. The enormous spread in the consumption of mineral oils all over the world has been the subject of much wonderment in commercial circles. Many private individuals and firms are making rapid fortunes; adventurers at the wells are becoming rich men; merchants and retailers, who, from various causes, to which we need not revert, were on the eve of bankruptcy, recovered themselves on the rapid development of this trade. Of course, many speculators went to ruin in the early days of petroleum; but during 1863 it was comparatively a safe and highly remunerative article. It is now a standard article of commerce. The business in it has assumed a tangible and permanent form. Yet, with all this, added to a capital of £75,000, the adventurous directors of the Oil-Wells Company of Canada think it "would not be for the interest of the shareholders" to carry out their promises. We bid a hearty farewell to the promoters, who we hope will, for the future, keep to their legitimate calling, and leave monster commercial schemes to our merchants and traders.

THE USE OF PETROLEUM IN THE NAVY.—Chief Engineers Wood, Whipple, and Stimers, of the navy, have reported to Secretary Welles the results of experiments upon a process for using petroleum oils as fuel for the generation of steam. These experiments, extending over a period of five months, show a percentage of 114.3 per cent. in favor of the oils over anthracite coal for the production of twenty pounds pressure of steam. Anthracite coal of the best quality was used in the same boiler alternately with the oils, and as nearly as possible under precisely the same conditions and circumstances, and accurate determinations were made as to time, pounds of water evaporated per pound of coal and per pound of oil respectively, from water of known temperature. The results gave for the crude petroleum an evaporatic of 10.36 pounds of water per pound of oil, or in the proportion of 23,206.4 pounds per ton; and for the mean of the best anthracite coal 5.1 pounds of water per pound of coal, or in the proportion of 11,424 pounds of water per ton of coal—being a higher evaporation in favor of the petroleum of 103.1 per cent. in the same boiler—with a percentage of 114.3 in favor of the oil in the time required for generating steam. These results are remarkable, but the engineers who conducted the experiments failed to report upon the comparative cost of using coal or oil. Until this part is decided, the important question of economy remains undetermined. The report recommends a continuance of the investigation.

INSPECTOR OF GAS-METERS.—In the Senate of the New York Legislature, now in session at Albany, Mr. Fields gave notice of a bill to amend the act for the protection of the consumers of gas. It provides that the salary of the State Inspector of Gas Meters shall be charged to and paid into the State Treasury by the several companies in the State, in amount proportionate to the amount of the stock actually paid in and secured, to be ascertained by the Comptroller of the State, he to have the power to sue any delinquent company for the amount charged, and ten per cent. additional, the Comptroller in any future assessments to allow to such gas companies as have been heretofore assessed on their nominal capital stock the excess paid, or to be paid by them over the amount which would have been assessable on the capital stock actually paid in. Since the above was written we learn that the bill has been passed in the Senate, and the probabilities are that it will meet with little or no opposition in the Assembly.

HARTFORD, CONN.—At the annual meeting of the Hartford City Gas-Light Company, held recently, the old board of directors was re-elected, as follows: S. S. Ward, Calvin Day, R. D. Hubbard, James Bolter, Geo. Roberts, Wm. L. Collins, Dayton Hillyer, Leonard Church, and W. J. Goodsell. At a subsequent meeting of the Directors, S. S. Ward was chosen President and Treasurer; Thomas R. Dutton Superintendent; and J. P. Harbison Secretary.

GREENBURGH, N. Y.—The *ci-devant* Dobbs' Ferry Gas Company has no longer an existence, having experienced a financial collapse, and lost its individuality by being merged into a new company, known as the Greenburgh Gas-Light Company.

IRON FOUNDRIES.

MORRIS, TASKER & CO.,
PASCAL IRON WORKS,
[ESTABLISHED 1821,]
PHILADELPHIA,
Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues,
GALVANIZED WROUGHT IRON TUBES,
ARTESIAN WELL PIPES,
of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.
Gas and Steam Fitters' Tools, &c.
STEPHEN MORRIS,
THOMAS S. TASKER,
CHAS. WHEELER,
STEPHEN M. P. TASKER.

J. VAUGHAN MERRICK, W. H. MERRICK,
JOHN E. COPE.
SOUTHWARK FOUNDRY,
FIFTH & WASHINGTON STREETS,
PHILADELPHIA.
MERRICK & SONS, Engineers,
MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.
Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for providing Street Mains, Centre Seals, Governors, Wrought or Cast-Iron Line Sieves for Purifiers, Purifier Hoisting Machines, &c., &c.
Address— MERRICK & SONS,
5th and Washington Streets, Philadelphia.

POOLE & HUNT, BALTIMORE, MD., are prepared to execute orders for
GAS-HOLDERS,
IRON-ROOF FRAMING,
And all other descriptions of
Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.

R. D. WOOD & CO.,
MANUFACTURERS OF
CAST-IRON PIPE, RETORTS, &c.
Office, 400 Chestnut Street,
PHILADELPHIA.

PROTECTED WROUGHT-IRON WATER & GAS PIPE.
HYDRAULIC CEMENT SEWER PIPE,
KNIGHT, WOODWARD & CRAWFORD,
Office, Cor. READE & CENTRE STS., New York.
Sewer Pipes extensively used in Brooklyn, and now introduced in New York, Jersey City, Newark, Hartford, Albany, and other localities, from 8 to 24 inches in calibre.
Water Pipes, lined and coated with Cement mortar, ready for laying and back filling, and can be tapped like cast-iron pipes, which they excel in durability, discharge, and economy.
Factories { Cor. Bond & Union sts., Brooklyn. " Washington & South 8th sts., Jersey City.

BERGEN IRON WORKS,
Established 1833.
R. A. BRICK, Manufacturer of CAST IRON WATER and GAS-PIPES. RETORTS, PIPES, &c., always on hand. Office, 109 Leonard Street, New York.

S. FULTON & CO., (Successors to S. Colwell & Co.) Manufacturers of Pig Iron and Cast Iron Gas and Water Pipes, also Heavy and Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.
SAMUEL FULTON, THEO. TREWENDT.

A. CARR, MANUFACTURER AND DEALER IN WROUGHT AND GALVANIZED IRON PIPE, BRASS COCKS, VALVES, &c., and all descriptions of FITTINGS FOR STEAM, WATER and GAS,
165 MERCER STREET, New York.

FLORENCE IRON WORKS.—The subscriber is prepared to execute orders and make contracts for Cast-Iron Water and Gas-Pipes, from 2 inches to 48 inches in diameter; also, Retorts, Bench-Castings, Branches, Bends, and all Castings for Water or Gas-Works. Pipes and Castings coated with Smith's Patent Coal Tar Varnish to prevent corrosion.
JOSEPH G. JONES,
205½ Walnut Street, Philadelphia.

CLARK'S PATENT STEAM AND FIRE REGULATOR CO., sole Patentees and manufacturers of CLARK'S PATENT STEAM AND FIRE REGULATOR, No. 5 PARK PLACE, New York.
W. H. PERRINE, Pres.

GAS-BURNERS.

F. LUNKENHEIMER'S
ADJUSTABLE
GAS-BURNER.
Patented Sep. 8th, 1863.
This burner will give a good steady light under irregular pressures, and can be regulated to any size of light, thus saving gas. It will not clog up, and prevents blowing.
Orders will be promptly filled by addressing the Patentee, at the Cincinnati Brass Works,
No. 13 East Seventh Street,
Cincinnati, Ohio.
F. LUNKENHEIMER.

T. G. ARNOLD,
MANUFACTURER OF
GAS-BURNERS,
And Importer of SCOTCH TIPS,
No. 447 BROOME ST.,
Second door west of Broadway, New York.
Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

C. GEFRORER,
Manufacturer of
GAS-BURNERS,
For Lighting and Heating Purposes.
GAS HEATING AND COOKING APPARATUS; FITTERS' PROVING APPARATUS, &c.
No. 111 South Eighth St.,
Philadelphia.

THE ALPHA TUBE WORKS
WALSALL, STAFFORDSHIRE, ENGLAND,
ESTABLISHED 1830.
LAMBERT BROTHERS,
MANUFACTURERS OF
Lap-welded Boiler Tubes, Locomotive and Marine Engine Fittings,
PATENT ECONOMIZING
GAS-BURNERS,
Regulated to burn without noise or fluttering at sixth-tenths to eighteen-tenths pressure. Last twenty Scotch tips. Price from 8s. to 40s. per gross; liberal allowance to wholesale buyers. Any size for any gas (coal, wood, or cannel) screw either taper s/8, s/4, or plug.

PETROLEUM GAS.

THE AUBIN GAS-WORKS COMPANY, OF ALBANY, N. Y., have adapted their Works to petroleum and the heavy oil obtained from its distillation. Parties desiring information will be referred to Village Gas-Works thus adapted, where the ordinary yield of gas is from 150 to 200 cubic feet per gallon of oil. This yield, and the great improvements which experience has added to the Aubin Works, enable them to make a rich gas at a low cost—the only way to compete with kerosene.

COAL TAR.

THE NEW YORK GAS-LIGHT COMPANY are prepared to receive offers for their entire production of COAL TAR for one year, commencing June 1st, 1864, to be delivered at their Works, foot of 21st street, East River.
Also, AMMONIACAL WATER and GAS-LIME for sale by contract, or otherwise.
For particulars, apply at the office of the Company, 157 and 159 Hester street, New York.

WOOD GAS.
MARK LEVY'S PATENT.

I WOULD CALL THE ATTENTION of Gas Companies and the public generally to my Improved Method for Making Gas from Wood. The Gas made by this process costs from 35 to 40 per cent. less than any other Gas, and the light is at least 10 per cent. more brilliant than that from coal. I have completed the erection of Works for the New Rochelle Gas-Light Company, and their works are now in successful operation. I am prepared to give estimates for the erection of Gas-Works, or to alter coal or resin works, at a small expense. Any information can be obtained on application to the Patentee,
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WE HAVE ON HAND ABOUT 4,200 Feet of New Cast-Iron Socket-Pipe (18-inch internal drain), in lengths to lay 12 feet each. Each piece weighs about 1,600 lbs., and has been proved at a pressure of 300 lbs. per square inch. Parties wishing to purchase the whole or a portion of it will please address
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Capacity, 6,800 feet, 25 feet diameter, 14 feet high, well braced inside, with cast-iron guide frame, balance weights, chains, &c., in perfect order. Cost $1,500. Will be sold, if applied for immediately, for $500.
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The Conically Slotted Solid Wood Tray was patented 21st October, 1862, by N. O. Hawxhurst, assignee of Wm. Combe, and all persons are cautioned against purchasing such trays of R. G. Hunt, or any other person except the subscriber, as it is a direct infringment of said patent. The following companies are now using these trays.
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I also caution any one against purchasing a license, or privilege of using my patent, without it being signed and acknowledged BY ME, and without having first corresponded with A. DOISY, Esq., Cincinnati, Ohio, or myself.
H. P. GENGEMBRE.
Pittsburg, Dec. 21, 1863.

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It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

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This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Four Cents per Pound.

A liberal discount made to parties purchasing by the ton.

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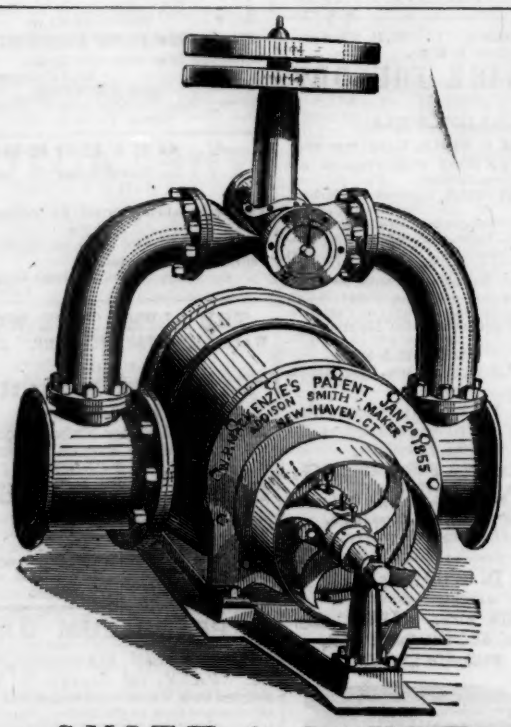

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They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable, cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

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Estimates given for Gas-Works, Gas-Holders, or any Gas Apparatus.

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Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

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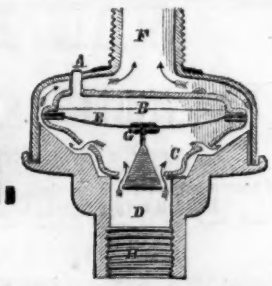
PATENT

AUTOMATIC GAS CONTROLLER.



Notice to Gas Companies and Consumers of Gas generally.

WE RESPECTFULLY INVITE YOUR ATTENTION TO THE FOLLOWING TRUTHFUL DESCRIPTION OF THE construction and operation of this recent and most important inveption; its application to every street lamp, and on the fixtures within the works of the Gas Companies, as well as for the use of the general consumer, will be found to effect perfectly and reliably, the object so long sought for, viz.: **a perfect control of the Gas under varying pressures, emitting the Gas at the burner without force, and without increase or diminution of quantity, and hence promoting the highest possible illuminating power of the Gas.**

THE AUTOMATIC GAS CONTROLLER

Is designed to occupy the place of the gas-burner. Within the circumference of a small cylinder, below the burner, is placed a conical valve, attached to a movable diaphragm, the valve and valve seat is proportioned, so that under a supply of Gas, varying in pressure from four-tenths to five inches, the burner will continue to produce the same consumption and development. The unerring accuracy of movement of the Diaphragm at every change of pressure, whether gradual or sudden, and its positive control of the valve which admits, by its proportionate increased or diminished aperture, the same unvarying amount of Gas, has elicited the unqualified approbation of engineers and other experts in the profession.

The simplicity of its construction, and materials used, are a sure guarantee of its durability and continued successful operation. They afford to the consumer of Gas the advantage of a **superior light, with the greatest possible economy**; and for the Gas Company, they control the Street Lamps, affording a more satisfactory light for the public, without waste.

The public are invited to witness its operation, at the Office of the Company; and samples will be sent to Gas Companies for experiment, on applicatiou by letter or otherwise.

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Office, 627 BROADWAY, (up stairs.)

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This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS and REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

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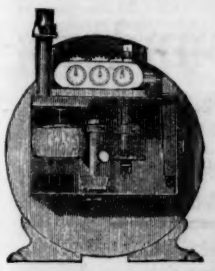
1 BARRETT STREET, BOSTON, will meet with prompt attention.



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MANUFACTURERS OF

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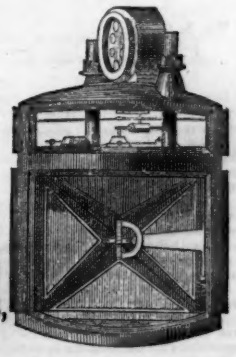

METER PROVERS, CENTRE SEALS, PHOTOMETERS, GOVERNORS, STATION METERS, EXPERIMENTAL METERS, PRESSURE REGISTERS, PRESSURE GAUGES, &c., &c.

The firm of HARRIS & Co., which comprises the senior partner and only practical Meter maker of the late firm of HARRIS & BRO., will continue the manufacture of Meters, &c., of every description, and will guarantee to furnish an article of Meters equal to the best in the country, at the lowest rates, and combining the latest improvements with great durability and accuracy. The reputation of the Meters of the late firm of HARRIS & BRO. is confidently appealed to. All our Meters are tested by a sworn Inspector. TERMS EASY.

ROBBINS' PATENT WATER, GAS & STEAM JOINT.

THE PROPRIETORS of this unrivalled joint are now prepared to introduce it to general use, and to guarantee that, in all respects, it will fulfil perfectly all the requirements of either water, gas, or steam. It is a joint which remains in all situations absolutely tight.

The following illustrations, with the appended explanations, will give a good idea of the improvement:

Fig. 3.

Fig. 1.

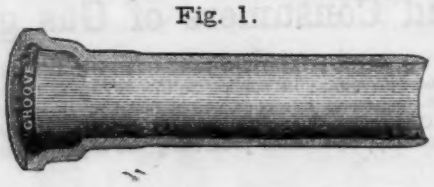

Fig. 2.

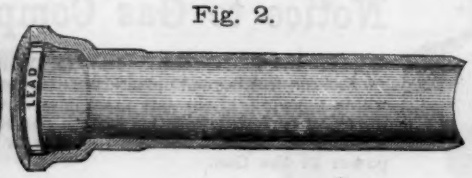

Fig. 4.

FIG. 1. Is a sectional view of a pipe showing a groove to receive a lead ring.

FIG. 2. Is a sectional view of a pipe showing a lead ring in the groove.

FIG. 3. Represents a former, which is used in the bell end of the pipe while casting the lead ring. Before using the former, however, a strip or belt of India rubber is first inserted in the socket, against which the former rests to prevent the lead escaping from the groove while being cast. Upon the cooling of the lead, the former and rubber ring are withdrawn from the socket, and the lead ring is left projecting inwards from the groove all around, forming an indestructible packing to receive the spigot-end of the pipe.

FIG. 4. Shows two pieces of pipe in connection with an hydraulic jack, by which the spigot-end of the pipe (which is cast tapering and may be cast in a chill), is forced into the lead ring in the groove which perfects the joint. A, represents the jack; B, B, the chains by which the pipes are drawn together; and C, C, pieces of pipe.

This ring joint packing may be cast at the foundry or any convenient place, and when delivered at the ditch, may be laid, and perfect joints formed, by any laborer, above or below the surface, or in ditches filled with water, there being *no joint ditching required*, and it can be laid with very great rapidity.

Among the economies realized by this joint may be enumerated, the saving in the weight of the pipe, in the amount of lead required to be used in forming the packing, in the labor of ditching, and in laying the pipe.

The bell or socket may be cast one-half the usual length, as the width of the groove requires, but from a half to one and a half inches, according to the size of the pipe, thus saving in the total weight about two hundred pounds per ton.

The weight of lead required to form this joint, as compared with the amount of lead used in forming a joint according to the old method, is fully seventy-five per cent. less, only so much being required as to maintain the compensating principle, or enough to allow (upon the raising or depressing of the line of pipe out of a direct line) what is lost upon one side of the ring packing, to take its place upon the other; thus securing flexibility of the joint without affecting its reliability. The use of yarn or hemp packing is dispensed with, the cost of which is an entire saving as compared with the old method of making joints.

The saving of labor in ditching is the total amount usually expended in digging joint-holes, there being *no joints to be caulked.*

The saving in labor in laying pipe furnished with this joint is a sum equal to the whole cost of carrying lead, fuel, ladles to the ditches, casting the lead, bailing out water, and the entire labor of caulking, less only the sum charged for casting the lead ring packing at the foundry, which is comparatively trifling. This last-mentioned economy has been estimated by the best engineers at seventy-five per cent., or the same as the saving in the quantity of lead used.

The cost of pipe cast from our patterns is the same per ton as pipe cast for the old form of joint. The principal iron-founders propose to charge the same price.

We have submitted these joints in water-pipes to a pressure of two hundred and fifty pounds to the square inch, and they have remained perfectly tight. It has also been submitted for months in gas-pipes to the ordinary pressure of our city gas-mains, without any leakage whatever. We are aware that these statements may be deemed by many extravagant, but the merits of the improvement warrant them all, and the most skeptical may be fully convinced by an investigation of its value, and by witnessing the tests to which we submit it, or by its use under any conceivable circumstances.

TESTIMONIALS.

OFFICE OF THE WATER COMMISSIONERS,
CITY HALL, JERSEY CITY, October 14th, 1863.

Dear Sir,—On the 26th of May last, about two hundred and sixty feet of cast-iron water-pipes, six inches in diameter, with joints constructed according to your invention, were laid for the Jersey City Water-Works, in Prospect street.

The operation of uniting the joints of the pipes, was performed with remarkable facility, and with an important saving in time, materials, and labor. The joints proved perfectly water-tight, after turning the full head of water on the pipes.

In my opinion, your invention has proved entirely successful, and will be found highly beneficial to water companies.

Yours, respectfully,
ROBT. C. BACOT,
Superintendent and Engineer, Jersey City Water-Works.

MR. R. C. ROBBINS.

ENGINEER'S OFFICE, CROTON AQUEDUCT DEPARTMENT.

Dear Sir,—I have examined your plan for making joints in cast-iron water pipes, and have a report from one of my assistants, of certain experiments made by you, to prove the certainty and economy with which the joints can be made, and their stability when finished.

I think the experiments showed that the joints could be made quite as rapidly, if not more rapidly, than those made in the ordinary method now in use; the quantity of lead used was less than that required in the common joint, and no yarn packing was required. In these respects, your joint seems superior.

After the joints were made, a pressure of three hundred pounds to the square inch, was put upon the pipe in such a manner as to test the efficiency of the joint to prevent both leakage of water, and separation of the pipes from each other longitudinally. This pressure failed to produce either leakage at the joint, or separation, so long as the pipes lay in a direct line; but on deflecting them six and a half inches, in a length of twelve feet, the joint commenced leaking. It is fair to add, that this is a greater deflection than would often be found necessary in laying pipe.

I think the efficiency of the joint in both the points tested in this last experiment, might be increased by increasing the quantity of lead, both in thickness and width.

Altogether, the result of the experiments was such that I have determined to make a more thorough test of your invention by putting down about one thousand feet of pipe, when we commence our operations for the coming season.

The diameter of the pipe subjected to experiment, was six inches, and is the same size that I propose to put down next year.

I am, very respectfully, your obedient servant,
A. W. CRAVEN, Chief Engineer, &c.

To R. C. ROBBINS, Esq., Jersey City.

METROPOLITAN GAS-WORKS,
ENGINEER'S OFFICE, NEW YORK, October 9th, 1863.

Dear Sir,—The undersigned had the pleasure of being present at an experimental test of your patent joint for gas and water pipe, made at the yard of the Croton Aqueduct Department, and cheerfully testify to the results obtained, namely:

First experiment was made with two lengths of eight-inch pipe, jointed together, when a pressure of three hundred pounds to the square inch was applied. This pressure did not force the pipe apart, nor start the joints, but they remained, during this experiment, perfectly tight.

Second experiment was made by deflecting the pipe five inches, which is about equal to eighteen inches in one hundred feet, and the same pressure applied, which caused a small leak at the joints.

Third experiment was made by taking the pipes apart and rejointing them, when the same pressure was applied when lying straight and when deflected; at this experiment there was no leakage.

From these severe tests it is my impression that the superiority of your patent joint has been made manifest, and that it must eventually supersede the old way of jointing pipes together, saving both time and material.

Wishing you success in your enterprise,
I am, very respectfully, yours, &c.,
AMBROSE J. WHITE, Engineer.

To R. C. ROBBINS, Esq.

OFFICE OF THE METROPOLITAN GAS-LIGHT COMPANY,
NEW YORK, October 9th, 1863.

Dear Sir,—Having been present at the testing of your patent joint for gas and water pipe, at the yard of the Croton Aqueduct Department, I can testify to the results as stated by Col. A. J. White and fully concur with him in the opinion expressed in his letter to you of this date.

Very respectfully, yours,
W. TITUS, Secretary.

R. C. ROBBINS, Esq.

NEW YORK, October 23d, 1863.

Gentlemen.—I am pleased to be able to inform you, that we are fully satisfied, that we have done well in adopting your "Improved Joint," in the construction of an aqueduct which we are now building on Oil Creek, Northwestern Pennsylvania.

We have ten miles of three and four inch pipe to lay this season, and, in our estimation, the perfection of the joint, economy in lead, and rapidity with which the pipe can be laid, render it entirely preferable to any other method of laying pipe.

Our Mr. Hutchings advises us that he is putting down the three and four inch pipe at the rate of twenty-five to thirty lengths per hour, with two men in the trench. We are much pleased with this result.

Respectfully yours,
HUTCHINGS & FOSTER.

Messrs. R. C. ROBBINS & Co.

For further information, or for prices and terms, which will be very reasonable, apply to

R. C. ROBBINS & CO.,
No. 197 GREENWICH STREET, NEW YORK.